INDEX TO ADVERTISEMENTS PAGE 49

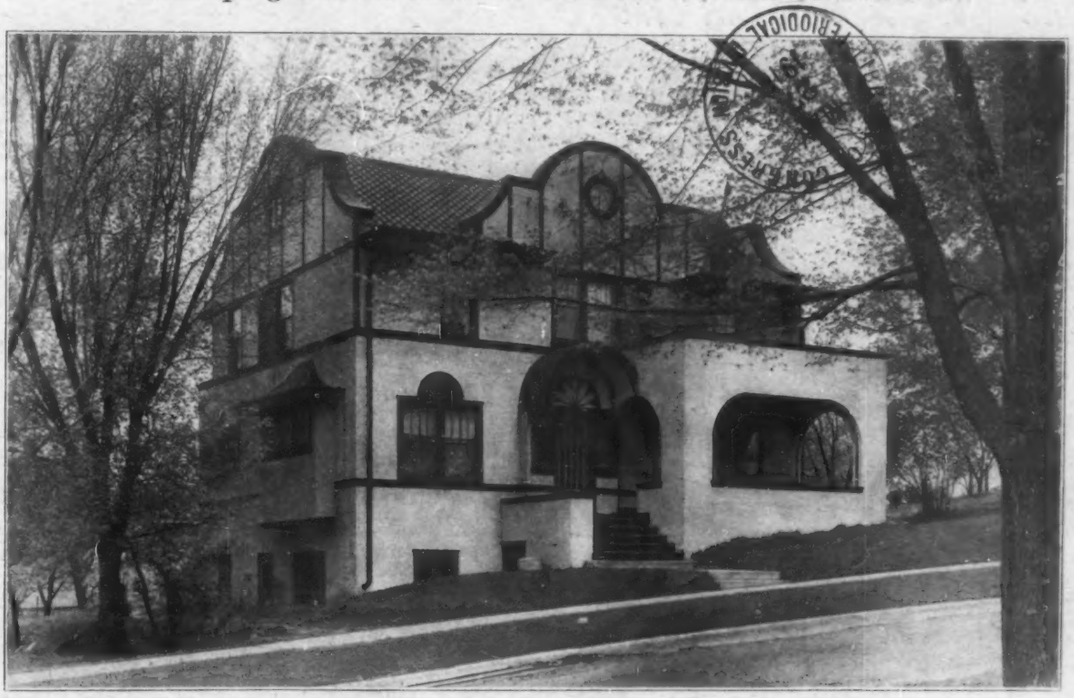
# Rock Products and BUILDING MATERIALS

INCORPORATING DEALERS BUILDING MATERIAL RECORD

Volume XVIII. CHICAGO, ILL., MAY 22, 1916. Number 2

# Type of Modern Rough Cast or Stucco Exterior

*Developing All the Richness Inherent in a Plastic Material*



RESIDENCE ON PROSPECT AVENUE, MADISON, WIS.

The perfection of metal lath and expanded metal lathing, the introduction of white cement, and the development of mortar colors and brush applied color coatings have together made possible this signal art achievement of the century.

**Giant** BELT for Your Drives

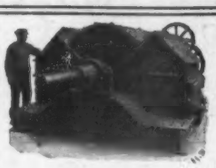
**Granite** BELT for Your Elevators

**Supremo** BELT for Your Conveyors

**WHY?** ASK US.

**Revere Rubber Co.**

BOSTON NEW YORK CHICAGO NEW ORLEANS PHILADELPHIA



Patented

**"PENNSYLVANIA"**

**Hammer Crushers** For Crushing and Pulverizing Lime Limestone, Gypsum, Marl, Shale, Etc

Main Frame of Steel, "Ball and Socket" Self aligning Bearings; forged Steel Shaft; Steel Wear Liners; Cage adjustable by hand wheel while Crusher is running.

No other hammer Crusher has such a big Safety Factor.

**Pennsylvania Crusher Co.**

New York PHILADELPHIA Pittsburg

**CONSISTENT ADVERTISING**

UNLIKE THE PROVERBIAL ROLLING STONE

**GATHERS MOSS**

**Clinchfield Portland Cement Corporation**

*General Office and Mills:*

Kingsport, Tenn.

*Strong & Sound*

*Fine & Uniform*

"The Acknowledged New Standard of the South"

**Annual Capacity 1,500,000 Barrels**

*Sales Offices:*

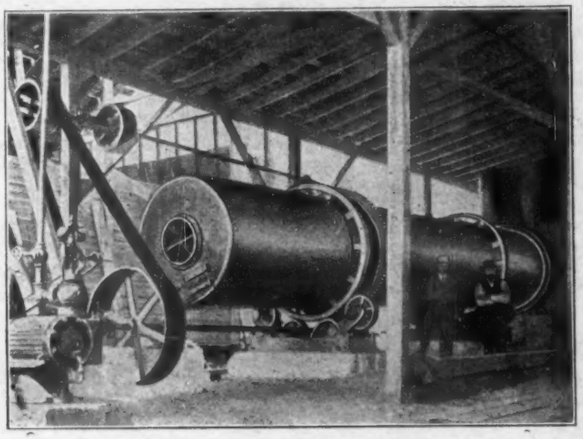
KINGSPORT, TENN.

1305 Union Trust Bldg. CINCINNATI, OHIO 908 Com'l Bank Bldg. CHARLOTTE, N. C. 413-15 Am. B'k & Tr. Bldg. SAVANNAH, GA.

**RUGGLES-COLES DRYERS**

STATIONARY AND PORTABLE

*"Built to Dry at the Lowest Ultimate Cost"*



Seven different types of dryers in many sizes and special dryers designed and built to meet unusual conditions. We are now drying 67 kinds of materials, among them sand, rock, gravel, gypsum, coal, clay, etc.

Our many years of experience is at your service

**Ruggles-Coles Engineering Co.**

CHICAGO OFFICE, McCormick Bldg.

50 Church Street NEW YORK

Daily Capacity 9000 Barrels

Quality Quantity Service

*MORE THAN FIFTEEN YEARS OF SATISFACTION*

FOUR PLANTS:

ALPENA, DETROIT, WYANDOTTE and CLEVELAND

**HURON and WYANDOTTE**

Great Water and Rail Facilities

Best Serve the Entire Middle West

EVERY BARREL TESTED AND GUARANTEED

SOLD BY THE BEST DEALERS USED BY THE BEST BUILDERS

**Main Offices: 1525 Ford Building, Detroit, Mich.**

Daily Capacity 9000 Barrels

Quality Quantity Service

LAKEWOOD LINE
BUILT TO LAST

# STANDARD QUARRY EQUIPMENT

An experience of 18 years in the design and manufacture of quarry equipment is built into the following extensive list.

Lakewood Clam Shell Bucket

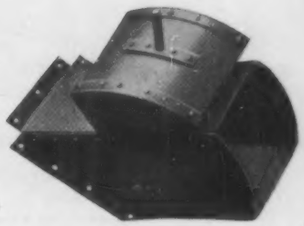
| | |
|---|---|
| Bin Gates | Quarry Cars |
| Blast Furnace Skip Cars | Radial Gate Hopper Cars |
| Bottom Dump Cars | Rocker Dump Cars |
| Buckets | Rotary Mine Cars |
| Cement Block Cars | Rotary Scoop Cars |
| Electric Transfers | Side Dump Cars |
| End Dump Cars | Slip Cars |
| Frog and Switch Points | Stone Skips |
| Gable Bottom Cars | Stone Sleds |
| Hopper Cars | Switches |
| Incline Cars | Tipple Dump Cars |
| Mine Cars | Transfers |
| One-side Dump Cars | Two-way Dump Cars |
| Platform Cars | "V" Dump Cars |
| Portable Track | "V" Dump Wagon |

Lakewood Quarry Car No. 241

Lakewood Stone Skip, No. 680

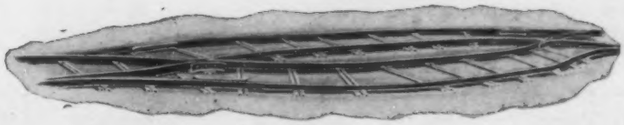
We maintain a Consulting Engineering Department which is at the service of the trade, to offer suggestions on any problem of quarry operation.

*The Lakewood Line—Built to Last*

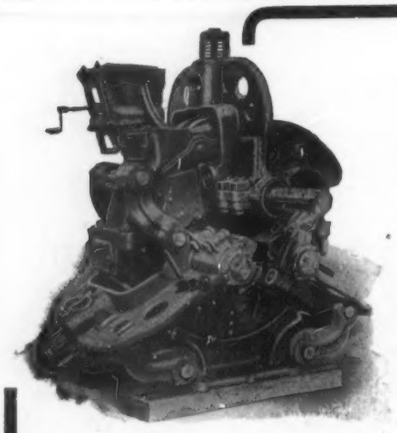


Lakewood Bin Gates, No. 715

## THE LAKEWOOD ENGINEERING CO.
CLEVELAND



Lakewood Portable Track and Switches



# MAXECON

## Means MAXimum of ECONomy

Years of experience with the assistance of our hundreds of customers has found THE SOLUTION OF GRINDING HARD MATERIALS. The MAXECON PULVERIZER combines highest EFFICIENCY, greatest DURABILITY and assured RELIABILITY, Uses the LEAST HORSE POWER per capacity. Embodies the features of our Kent Mill with improvements that make it MAXECON.

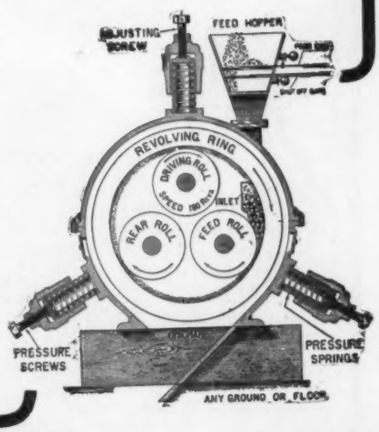
**WE DO NOT CLAIM ALL of the CREDIT for this achievement**

We have enjoyed the valuable suggestions of the engineers of the Universal Portland Cement Co. (U. S. Steel Corp.), Sandusky P. C. Co., Chicago Portland C. Co., Marquette Cement Mfg. Co. Western P. C. Co., Cowham Engineering Co., Ironton P. C. Co., Alpena P. C. Co., Castalia P. C. Co., Pennsylvania P. C. Co., and many other patrons.

## THE RING WOBBLES

The FREE WOBBLING POUNDING RING instantly and Automatically ADAPTS its position to the variations of work.

Its GRINDING ACTION is DIFFERENT than any other; besides the STRAIGHT rolling action of the rolls, the SIDE to SIDE motion of the ring makes the material subject to TWO crushing forces and DOUBLE OUTPUT results.




## KENT MILL CO.

10 RAPELYEA ST., BOROUGH OF BROOKLYN, N. Y. CITY
LONDON, W. C., 31 HIGH HOLBORN
BERLIN-HOHENSCHOENHAUSEN

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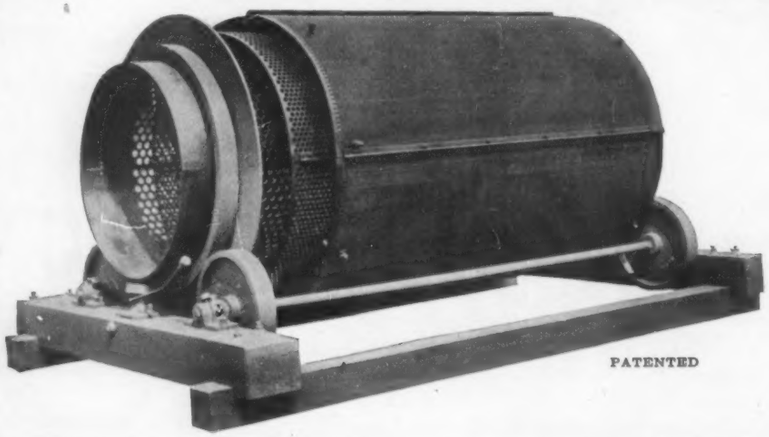


PATENTED

## Johnston & Chapman Co.

2921 Carroll Avenue, CHICAGO

**For Dry Screening Gravel** we make the most up-to-date machine on the market. Simple and Inexpensive.

**A New Jacketed Type of Cone Screen** for Washing Gravel. A Perfect Screen.

**Complete Gravel Washers of Any Size.** Successfully used in several of the largest gravel plants in the United States.

Another of Our Products that Can't be Beat

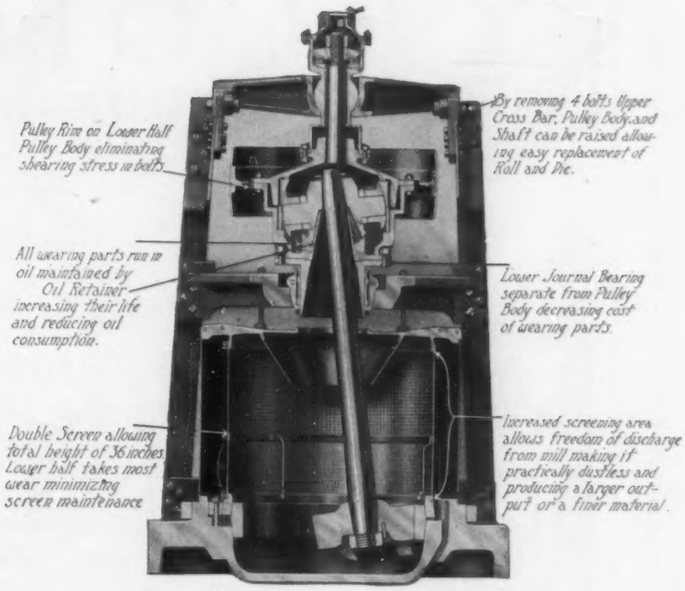
**The O'Laughlin Screen**

for Crushed Stone
See Illustration

## SCREEN SECTIONS for ALL SIZES of REVOLVING SCREENS

CONICAL SCREEN SHELLS
FOR GRAVEL WASHING PLANTS

Everything in Screens Made Right, for Crushed Stone, Gravel, Sand, Clay, Ore, Etc.


Pulley Rim on Lower Half Pulley Body eliminating shearing stress in bolts.
By removing 4 bolts Upper Cross Bar, Pulley Body and Shaft can be raised allowing easy replacement of Roll and Pie.
All wearing parts run in oil maintained by Oil Retainer increasing their life and reducing oil consumption.
Lower Journal Bearing separate from Pulley Body decreasing cost of wearing parts.
Double Screen allowing total height of 36 inches. Lower half takes most wear minimizing screen maintenance
Increased screening area allows freedom of discharge from mill making it practically dustless and producing a larger output of a finer material.

*GIANT GRIFFIN MILL with latest improvements*

## BRADLEY PULVERIZER CO.

BOSTON, MASS. WORKS—ALLENTOWN, PA.

## Every Cement Manufacturer

Will be interested in this latest model

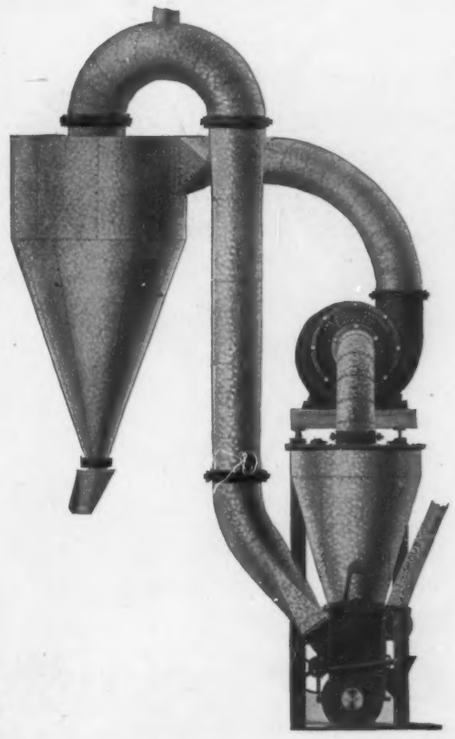
# Giant Griffin Mill

The improvements are many and far-reaching — giving larger output of finer material and reducing the former low maintenance cost considerably. All of the main wearing parts run in a bath of oil. Screen area has been increased 50%.

## 83% Through 200 Mesh Is Practical with This Mill

A very Simple Disc Feeder is used, insuring uniform feed to mill.

Complete data with descriptive literature and list of installations upon request.



# Pulverizing Successfully the Material You Want Reduced to a Powder

If you have experimented with or tried other methods of pulverizing your material and have been unsuccessful in obtaining an efficient grinding unit investigate the

# RAYMOND PULVERIZING AIR-SEPARATING SYSTEM

which has been proven successful in more than 400 plants grinding over one hundred different materials.

When you install a Raymond System you obtain first, an economical grinding mill; second, by air separation a uniform product of any fineness; third, absolutely dustless operation and fourth, guaranteed results.

The Raymond System has replaced other equipments for pulverizing many different materials in many plants and all of them **because of its economy and proven service in the pulverizing field.**

If you have any grinding or pulverizing problem the Raymond System will handle it; let us prove it.

Anyway don't you think it would be of advantage to you to know what the Raymond System **is** and what it can **do?**

Our new No. 12 catalog is now ready for distribution; send for it today.

**RAYMOND BROS. IMPACT PULVERIZER COMPANY**
1301 North Branch Street, CHICAGO, ILL.

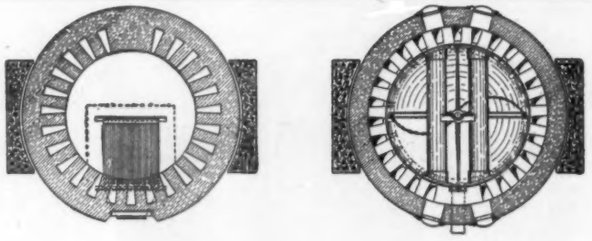
Please send us your literature.

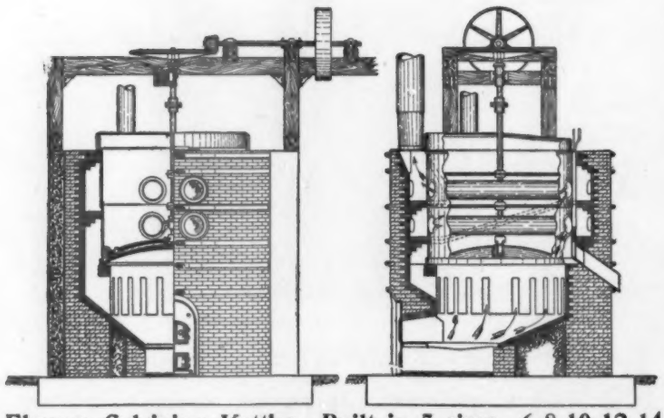
NAME .....

STREET .....

CITY..... STATE.....

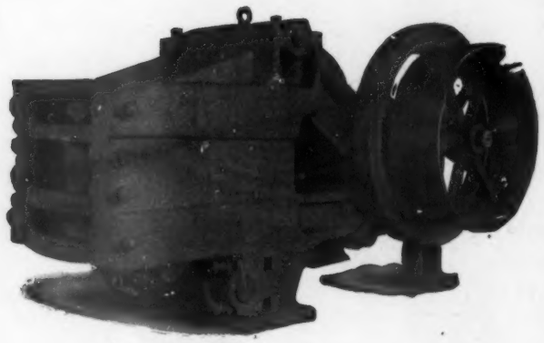
Enterprise Noiseless Mixer





Ehrsam Calcining Kettles—Built in 5 sizes—6-8-10-12-14 feet in diameter, having capacity of from 3 tons to 20 tons to the charge

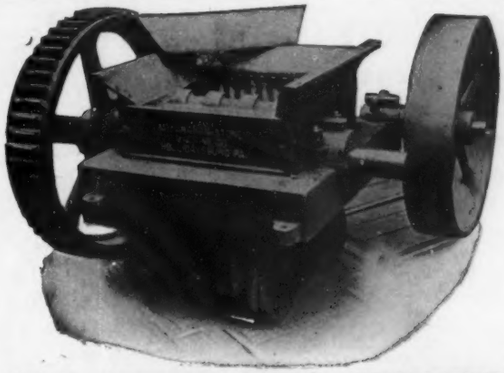
Horizontal and Vertical Heavy Duty Grinding Mills



Jaw Crushers Built in all sizes up to 24″ x 34″ jaw opening. Rotary Fine Crushers in sizes up to 42″ inside diameter.

**The J. B. Ehrsam & Sons Mfg. Co., ENTERPRISE, KANSAS**

**Manufacturers of Plaster Mill Machinery, Conveying, Elevating and Power Transmission Appliances**



**OUR SINGLE ROLL CRUSHER**
**IS AS SIMPLE AS CAN BE**

Is easily fed, makes less fines than either a Gyratory or Jaw. Capacity 5 to 500 tons per hour. For crushing Limestone, Dolomite, Hard Rock Phosphate, Cinders, Etc. Screens of all descriptions. Washers for dirty stone.

*Ask for Information*

**McLANAHAN-STONE MACHINE CO., Hollidaysburg, Pa.**

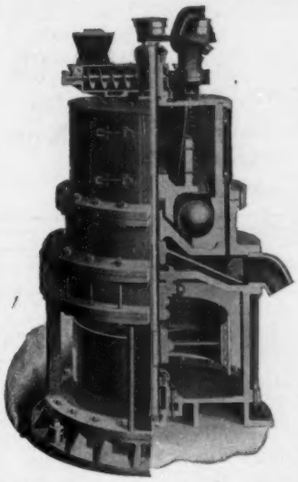
BACON ✓ FARREL
ORE & ROCK
CRUSHING ✓ WORLD KNOWN
**ROLLS-CRUSHERS**
EARLE C. BACON, ENGINEER
HAVEMEYER BUILDING, NEW YORK

**The Fuller-Lehigh Pulverizer Mill**

*A Complete Self-Contained Unit*

**The most economical mill for producing**

**Agricultural Limestone**



- Reduces lump rock to 20, 40, 60, 80, 100, or 200 mesh.
- Requires no outside accessory equipment.
- Requires no overhead shafts, drives or screens.
- All material discharged from mill is finished product.
- No inside journals or bearings.
- No inside lubrication.
- Uniform feeding system.
- Constant and free discharge.
- Low installation cost.
- Low operating cost.
- Low lubricating cost.
- Dustless operation.

Built in sizes to meet the requirements of your trade. Grinds rock to meet the specifications of all Agricultural Experiment Stations.

SEND FOR CATALOG NO. 70

**Lehigh Car, Wheel & Axle Works**

Main Office and Works: Catasauqua, Penna.

**The Success of A. C. Steel Frame**

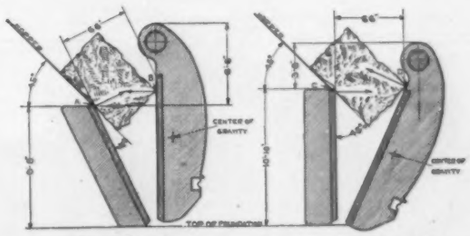
**84"x66" Jaw Crusher**

**Is Due to Its Improved Design**

Embodying the

**Vertical Swing Jaw**

As Illustrated by a Comparison of Receiving Openings, Inclined Versus Vertical Swing Jaw




Sketch No. 1: Allis-Chalmers Vertical Swing Jaw

Sketch No. 2: Old Inclined Swing Jaw

***Improvements in Feeding***

Sketch No. 1 shows a block of stone 4'-6"x6'-6", as it would naturally be delivered to the crusher. Note that the stone strikes the moving jaw at a point considerably below the fulcrum point and within the crushing zone. *A stone in this position will be crushed, or positively forced into the crusher* as the reaction from the surfaces at points A and B intersect each other, thereby *preventing any tendency to lift the stone out of the crusher.*

Referring to Sketch No. 2, where a block of stone of the same size is shown, note that the stone strikes the moving jaw near the fulcrum point, where there is little motion, entirely outside of the crushing zone, and above the jaw plates. A stone in this position will *not be crushed*, as the reaction from the surfaces at points C and D do not intersect, and *the tendency of these forces is to lift the stone out of the crusher.*

In Sketch *No. 1 the stone has to turn only 20 degrees* to rest flat against the stationary jaw, while in *Sketch No. 2 the stone must turn 45 degrees* to take the same position.

Note the difference in height of the two types of crusher, measuring from top of foundation to top of stationary jaw plate. Also note that with construction shown in *Sketch No. 1 there is much less chance for material to jump over top of the moving jaw.*

***Improvements in Operating***

When taking up wear of jaw plate or inserting new plates, both back and front toggles as well as the shims behind togles block *are readily freed* on account of the tendency of the vertical swing jaw (Sketch No. 1) and of the pitman to swing forward because their center of gravity is located behind their respective point of support.

*This is an important operating feature considering the great weight of the affected parts.*

**SMALLER JAW CRUSHERS DOWN TO LABORATORY SIZE**

**Complete Rock Crushing Plants and Cement Mills — Power Plants — Electric Motors—Gates Gyratory Breakers**

**Allis-Chalmers**

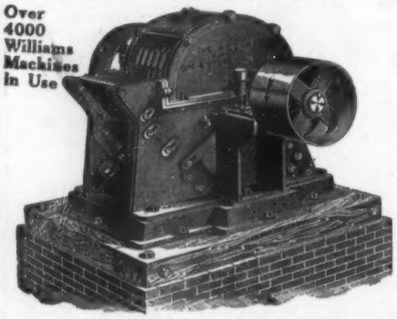
**Manufacturing Company**

OFFICES IN ALL PRINCIPAL CITIES

**MILWAUKEE, WISCONSIN**

For All Canadian Business Refer to Canadian Allis-Chalmers, Ltd., Toronto, Ont.

FOREIGN REPRESENTATIVES—Chile and Bolivia: Mark R. Lamb, Huerfanos 1157, Casilla 2653, Santiago, Chile. Europe, East Indies, etc.: H. I. Keen, 732 Salisbury House, London Wall, London, England. South Africa: Herbert Ainsworth, P. O. Box 6659, Johannesburg, South Africa. Australia: Frank R. Perrot, 883 Hay St., Perth, W. A., and 204 Clarence St., Sydney, N. S. W. South America, China, Philippine Islands, Japan; American Trading Co.




# Lump Lime Crushers and Grinders

We specialize in extra heavy crushers for lump lime—for hydrating or for agricultural work

SPECIFICATIONS

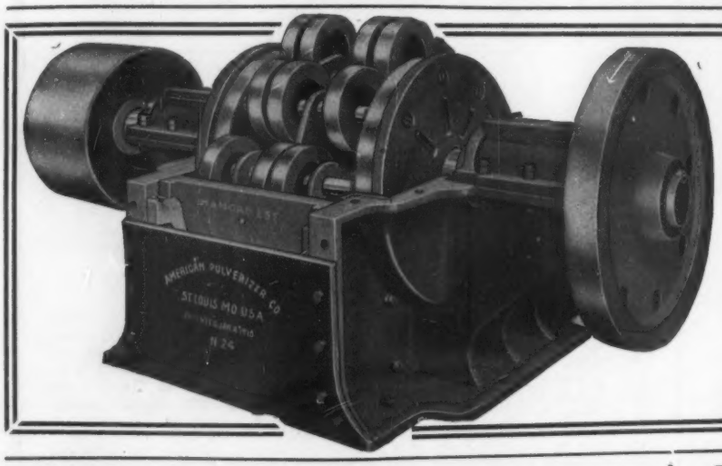
| SIZE | WEIGHT | CAPACITY TONS HOUR TO ¼" | CAPACITY TONS HOUR 6 MESH. | H. P. |
|---|---|---|---|---|
| No. 1 | 7000 lbs. | 8—10 | 6—8 | 20—25 |
| No. 2 | 8500 lbs. | 10—15 | 8—10 | 30—35 |
| No. 3 | 12000 lbs. | 15—18 | 12—15 | 40—50 |

**A FEW USERS**
Kelly Island and Lime Co.
National Lime & Stone Co.
U. S. Gypsum Co.
Tidewater Pt. Cement Co.

ALSO MADE IN SIX LARGER SIZES — WE ALSO MAKE A FULL LINE OF LIMESTONE CRUSHERS AND GRINDERS. WRITE FOR BULLETIN No. 4

**The Williams Patent Crusher & Pulverizer Co.**

General Sales Dept., Old Colony Bldg., CHICAGO, ILL.
2705 N. Broadway, ST. LOUIS, MO.
268 Market St., SAN FRANCISCO, CAL.



The *Machine* that has

## POWER TO PRODUCE

and will pulverize limestone, sandstone, gravelstone, brickbats, gypsum, phosphate rock, slag, glass cullet, manganese ore, coke, electro carbon, furnace linings, stove linings, quartz, etc.—and do the work with less speed, power and upkeep—built the strongest, best designed, best equipped.

***Money Back***

if machine fails to comply with our Specifications

*Particulars and catalog for the asking*

GEO. C. VIDETTO, Eastern Sales Manager
207 Fulton Bldg., Pittsburgh, Pa.

**AMERICAN PULVERIZER COMPANY**
EAST ST. LOUIS, ILLS.

One Feature of Stedman's

## IMPROVED ROLLER HAMMER PULVERIZER

***The Hammers***

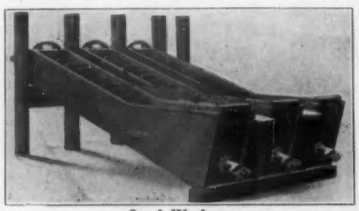
Six round manganese steel hammers are suspended at the end of manganese steel arms which are attached to cast steel discs that are keyed to the shaft. At the point where the arms are joined to the disks, there is a phosphor bronze polygonal block, which allows the hammers to be moved forward or backward for the purpose of taking up the wear of the hammer or for regulating the size of the product desired.

The Hammers are but one feature of the Stedman Pulverizer. Write today for further information as to why it means economy and efficiency for you.

Established 1834

**STEDMAN'S FOUNDRY & MACHINE WORKS**
Aurora, Indiana, U. S. A.

(Manufacturers of disintegrators, grinders, mixing machines of all kinds, Dump Cars, Shaker and Revolving Screens, Elevators, Conveyors, Pulleys and Sprocket wheels. Designers of complete crushing, grinding, mixing and screening plants.)

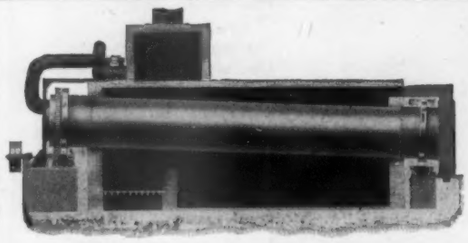


Sand Washers

9-Foot Dry Pan

## LEWISTOWN FOUNDRY & MACHINE CO.
LEWISTOWN, PA.

**Builders of heavy duty crushers and glass sand machinery**
**Glass sand plants equipped complete**
WRITE FOR PRICES AND CATALOG



We make the largest variety of

**MECHANICAL DRYERS**

Write for *Catalog No. 16*

We are also Engineers and Manufacturers of

| | |
|---|---|
| Car Hauls | Feeders |
| Crushers and Pulverizers | Mining Machinery |
| Drop Forged Chain | Mixing Machinery |
| Elevators and Conveyors | Sand Plants |
| Soft Mud Brick Machinery | Screens |

**THE C. O. BARTLETT & SNOW CO., Cleveland, Ohio**

# AUSTIN GYRATORY CRUSHERS

Made in Eight Sizes

50 to 5000 Tons Per Day

Plans and Specifications submitted and expert advice free on any problems involving rock-crushing or earth-handling.

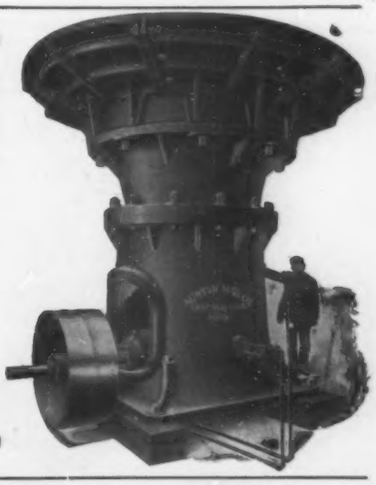
## AUSTIN MANUFACTURING CO.

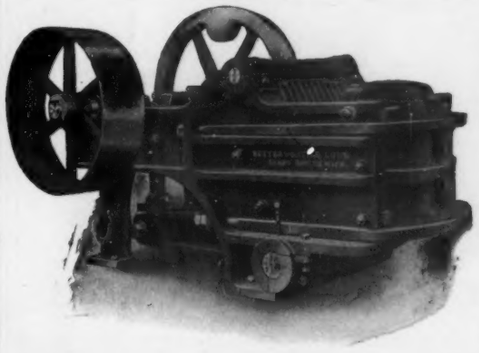
CHICAGO

New York Office: 50 CHURCH STREET

Canadian Agents: MUSSENS, Ltd., Montreal

We manufacture:—Road and Elevating Graders, Scarifiers, Road Rollers, Quarry Cars, Dump Wagons, Stone Spreaders, Street Cleaning Machinery.





Nippers—17 x 19", 18 x 26", 20 x, 30"24and6" x26 432x

# Jaw and Rotary CRUSHERS

For all Rocks and Ores Softer than Granite

GYPSUM MACHINERY — We design modern Plaster Mills and make all necessary Machinery, including Kettles, Nippers, Crackers, Buhrs, Screens, Elevators, Shafting, etc.

Special Crusher-Grinders for Lime

## Butterworth & Lowe

17 Huron Street, Grand Rapids, Mich.

Crackers—6 sizes—many variations.

## Record of 48-Inch Crusher for a Period of Approximately 11 Months—

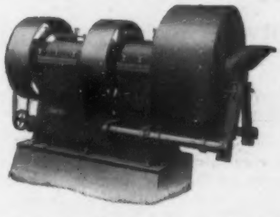
| | Per Ton Crushed |
|---|---|
| Operating labor | $0.00214 |
| Repair labor | .00205 |
| Material for repairs | .00280 |
| Power | .00899 |
| Total | $0.01598 |
| Less extraordinary items | .00228 |
| Cost under normal conditions | $0.01370 |

No. 1 Crusher ran 4,392 hours and crushed 197,640 tons of ore. One pair of discs ran 3,453 hours, crushing 155,385 tons at cost of $0.0014 per ton for discs.

No. 3 Crusher ran 4,462.5 hours, and crushed 200,812.5 tons ore. One pair discs ran 4,462.5 hours, crushing 200,812.5 tons at cost of $0.00109 per ton for discs.

Crushers handled 45 tons per hour, crushing 3 in. to ⅞ in. and requiring 35 horsepower each.

*Eventually Symons Discs*



MANUFACTURED AND SOLD ONLY BY

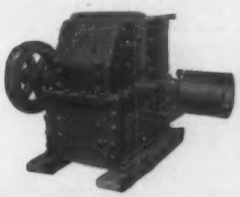
## CHALMERS & WILLIAMS

New York Office, Equitable Building

1450 Arnold Street, Chicago Heights, Illinois

## The Strength to Endure

This is the quality you get when you buy a



# K-B Pulverizer

It is built entirely of steel and is lined throughout with manganese hardened steel plates. The service of the hammers is multiplied by four by a simple device, which makes them adjustable to compensate for wear.

This pulverizer has been designed to fill the need for a strong, practical, and efficient hammer-mill. Using only 10-15 H.P. the No. 1 will reduce 4-7 tons of stone, or 8-13 tons of lime per hour. The No. 2 has a proportionately high capacity and low power consumption.

The interior of the machine is readily accessible, for our screen slides out of the lower casing like a drawer.

*Write today for catalogue*

## K-B PULVERIZER CO., Inc.

86 Worth Street New York City

*BUILT for SERVICE and DURABILITY*

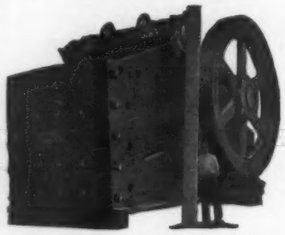
# Crushing Machinery
## Built to Meet All Demands

Large eccentric bearing. Spider arranged for removal of the concaves without dismantling the crusher.

Shaft suspended at point of least motion.

Cast steel gear and pinion. Removable countershaft bearing.

Built in sizes from No. 2 up to No. 10.



Water-cooled pitman and pitman bearings. Removable bushings in pitman and pitman bearings.

Large openings allowing steam shovel operation.

Built in sizes up to 66" x 86".

**Traylor Engineering & Manufacturing Co.**
Works: Allentown, Penna.
Eastern Office: 24 Church St., New York City; Western Office: Salt Lake City

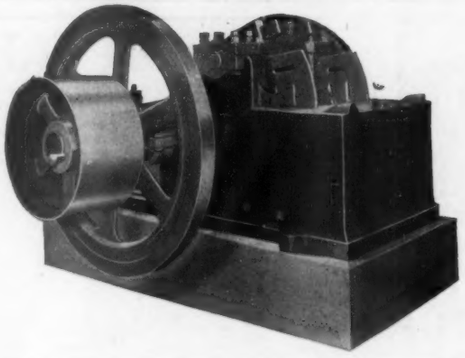


*One Advantage of the*
# Blake Type Crusher

The bed, bumpers and all movable parts are cast with all holes cored, requiring no machine work whatever, which enables us to make the castings stronger to withstand the wear, and eliminates the possibility of mistakes in making repairs and lessens the cost of construction as well as the repairs to the consumer.

*Write today for further information and one of our booklets.*

**Webb City and Carterville Foundry & Machine Works**
Main Office, Webb City, Mo.





# "Plymouth Gasoline Locomotive Is So Simple to Run," Says Fleigle, "My 8-Year-Old Son Handles It"

Frank Fleigle, brickmaker of Morrisonville, Ill., knows the Plymouth Gasoline Locomotive is "fool-proof," for Fleigle has proved it by letting his 8-year-old son run one he installed more than a year ago. Fleigle's son not only starts and stops it, but negotiates a 10% grade and handles the "Plymouth" with ease.

*From an Actual Photograph*

## "I Don't Need a Licensed Engineer with the Plymouth," Says Fleigle

"The elimination of gears and clutches makes the 'Plymouth' not only fool-proof, but solves my haulage problem, for your friction-drive locomotive is cheaper to run than feeding two horses, and think what I can do with it!"

## Plymouth Gasoline Locomotives Are Cheapest to Buy—Cheapest to Operate

The first cost of the Plymouth is less than any other industrial locomotive and it will do more work, last longer and perform its duty cheaper than any gasoline, electric, steam or compressed air locomotive on the market.

## An Easily Read Pamphlet—Yours for the Asking

Fleigle's full experience with the "Plymouth" and many others, showing actual cost and data, will be sent anyone upon request. It is worth anyone's time reading.

**THE J. D. FATE COMPANY**
210 Riggs Avenue - - - - - - - - PLYMOUTH, OHIO

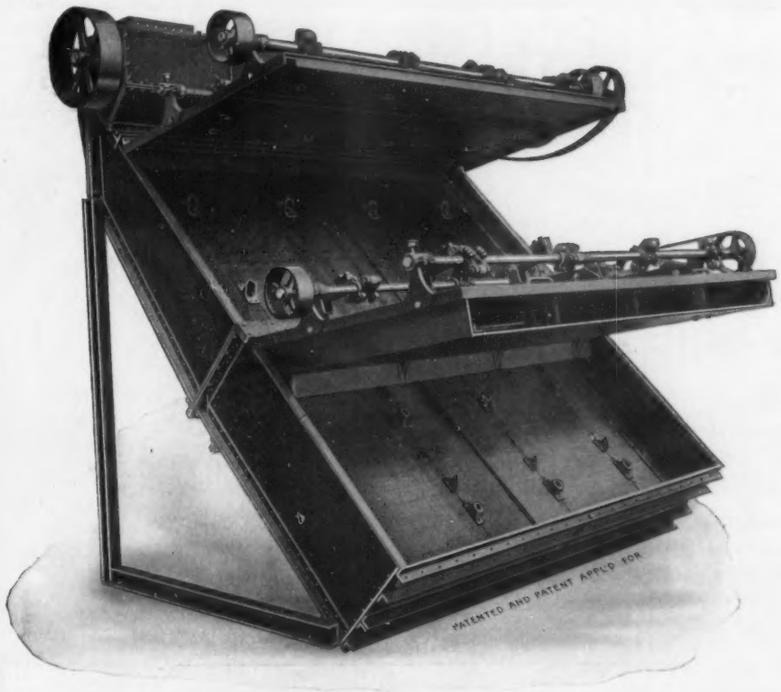
# Loading 1 to 1½ Yards of Sand Per Minute with a Jeffrey Self-Propelling Wagon and Truck Loader

The JEFFREY LOADER with one man will do the work of 6 shovelers in handling Sand, Gravel, Crushed Stone, and similar materials.

Figuring the wages of each shoveler at $1.75 to $2.00 per day, you can readily see that the Loader will soon pay for itself—and in addition to this, the earning capacity of your teams and trucks will be greatly increased, as they do not have to wait but a few minutes for a load.

Send now for our new Bulletin No. 177-35, with full description and picturing Jeffrey Loaders working under various conditions and handling different materials.

**The Jeffrey Mfg. Company** 935 NORTH FOURTH STREET **Columbus, Ohio**
New York Pittsburgh Philadelphia Birmingham Chicago Denver Milwaukee Montreal Boston




# STURTEVANT

## NEWAYGO GIANT SCREEN

**144 SQ. FT. OF SCREEN AREA
LARGEST INCLINED VIBRATING
SCREEN, FOR BIG SCREENING UNITS**

**Screens Everything Screenable**

**FROM ¼ INCH TO 180 MESH**

Newaygo Screens are built in many styles and sizes to fit nearly all kinds of materials, conditions and capacities. There are thousands in use.

**Newaygo Principle:—**

Inclined screen surface—so that coarse mesh produces fine product—large openings do not clog—coarse wire is durable. Wire cloth stretched tight and held taut tapped by hundreds of little hammer blows upon its reinforced surface gives an unequalled vibration without destructive shocks. No eccentrics, no bumping mechanism. Less than 1 H. P. operates the largest. Large capacity; accurate output.

*More in Use Than All Others Combined*

**SEND FOR NEW CATALOGUE**

**STURTEVANT MILL CO., HARRISON SQUARE, BOSTON, MASS.**



# ANNOUNCEMENT

## WORTHINGTON PUMP AND MACHINERY CORPORATION

announces that it has taken over all the properties and assets of

## INTERNATIONAL STEAM PUMP COMPANY

| | |
|---|---|
| Snow Steam Pump Plant | Buffalo, N. Y. |
| Deane Steam Pump Plant | Holyoke, Mass. |
| Laidlaw-Dunn-Gordon Plant | Cincinnati, Ohio |
| **Blake & Knowles Steam Pump Works** | **East Cambridge, Mass.** |
| **Power & Mining Machinery Co.** | **Cudahy, Wis.** |
| **International Gas Engine Company** | **Cudahy, Wis.** |
| **Fred M. Prescott Steam Pump Co.** | **Milwaukee, Wis.** |
| **Jeanesville Iron Works Company** | **Hazleton, Pa.** |

and will act as Sales Agent for HENRY R. WORTHINGTON, whose operation will be under the direction of the Worthington Pump and Machinery Corporation.

This opportunity is taken to express to the purchasing public the most cordial appreciation of past favors and support, and to bespeak for the Corporation the same courtesies and consideration heretofore extended to the above companies and plants.

April 24, 1916.

*The*

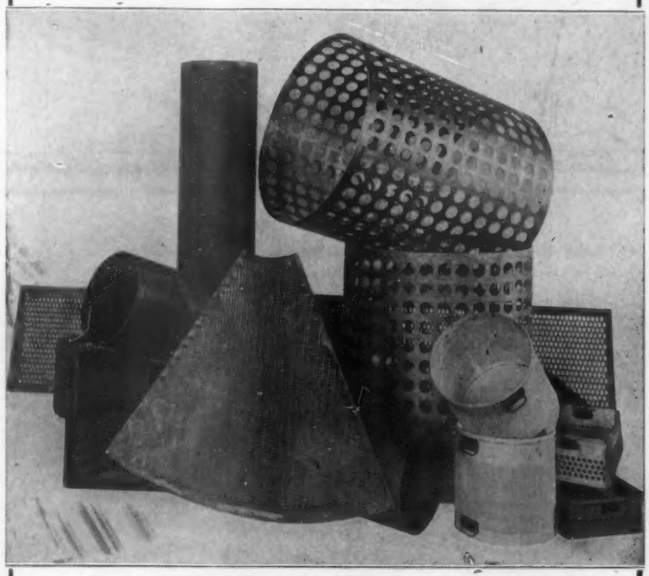
# Toepfer Hydrator

was two years in continuous use at one plant working ten hours daily before being put on the market. Another machine installed last season will pay for itself in one year at its present rate of saving over former methods. This machine was started by an inexperienced man and turned out a first class product from the very first day. THAT SHOWS THE SIMPLICITY OF THE TOEPFER HYDRATOR.

**W. Toepfer & Sons Co.**
**MILWAUKEE**

# PERFORATED METAL

*Steel Screens .·. .·. Iron and Steel Work*



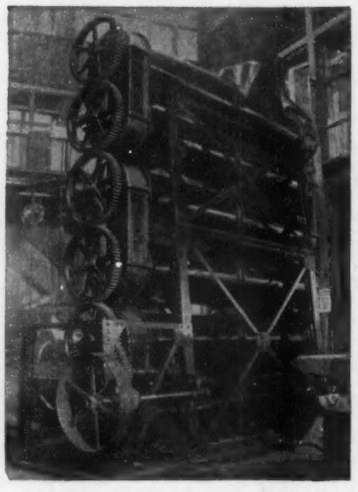
ELEVATOR BUCKETS, STEEL TANKS, ETC.

**W. TOEPFER & SONS CO.**

84 Menominee St. ESTABLISHED 1855 Milwaukee, Wis.

# HYDRATED LIME

## Its Marvelous Increase In Consumption



KRITZER CONTINUOUS PROCESS

### The Kritzer Service

Any lime can be successfully hydrated by our process; but whether your lime can be hydrated and successfully marketed is another question. We study your proposition and the possibilities of its commercial success, and advise you accordingly. Our ten years' experience in the business is a valuable assistance in this. Ours is not a mail order proposition. We investigate our customers' proposed plant thoroughly before we will enter into a contract with them. We turn down more prospects than we advise to go into the business. We can't afford to have any failures. Our customers' success is our success.

WRITE TO US

### Are You Meeting the Increasing Demand for Hydrated Lime?

There is nothing forced or unnatural about the growing popularity of this product. It is a natural growth resulting from a widespread awakening to the advantages of Hydrated Lime for a variety of uses—as waterproofing for Concrete, in wall plaster, and in almost every case where lime is called for. In hydrated form it is weatherproof, more easily handled, and better adapted to modern methods, both of commerce and construction. A continued growth of the demand may therefore be expected.

## The Kritzer Way

insures a product which will hold a continued place for itself on the market. We install plants complete, designed by our own expert engineers to meet your local conditions and turn out a uniform grade of Hydrated Lime of the highest standard, and with the greatest economy in cost of production. The Kritzer Continuous Hydrator, and the accessories installed with it, are the recognized standards in this line.

**THE KRITZER COMPANY** Chicago, Ill.

Put an

# ERIE REVOLVING SHOVEL

on Your Pay Roll This Year

while common labor is hard to secure, expensive and inefficient. Whether labor is plentiful or scarce, however, an ERIE is a mighty good investment.

The ERIE will (1) handle shallow street grading, (2) dig heavy rock, (3) dig trenches, (4) operate clam shell or scraper bucket, (5) drive piles.

**Write for Bulletin R-12, giving full particulars**

**BALL ENGINE COMPANY, Erie, Pa.**

Clyde Hydrator with Hood
"The common sense way"

# SIMPLICITY IS THE KEYNOTE OF SUCCESS

IT does not take a "master mind" to install a CLYDE Hydrating plant, nor does it take a "high priced" engineer to run one. If **YOU,** Mr. Lime Manufacturer, realized how simple it is to obtain a PERFECT HYDRATE, with the CLYDE HYDRATOR you would place your order with us by FIRST MAIL. Write us today—NOW, and let us explain to you what CLYDE PROCESS hydrated lime is and how to obtain the best results, then

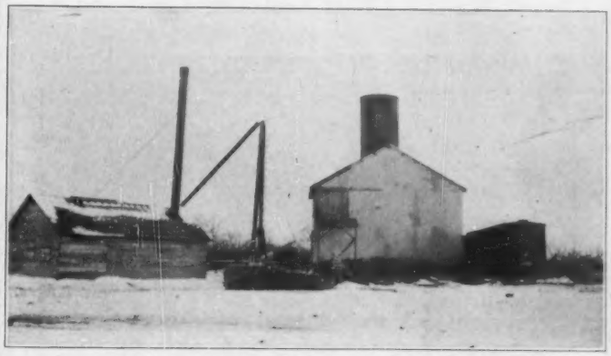
***Use your own judgment—it's up to you***

**H. MISCAMPBELL, Duluth, Minn.**

Patentee and Sole Manufacturer

# "Farthest North"

**In lime kiln installations**



The above photograph illustrates a Keystone Kiln for wood firing, erected for the D. H. Bowman Coal & Supply Co. of Winnipeg, at Oak Point, Canada.

The Steacy-Schmidt Mfg. Co. have erected kilns in all parts of the Western Hemisphere and their wide experience is at the service of any firm interested in efficient methods for lime kilns, hydrating or crusher plants.

*"Success Builders for the Lime Stone Industry"*

**STEACY-SCHMIDT MFG. CO.**

**YORK, PENNSYLVANIA**

**Manufacturers of the famous Keystone kilns—183 now in use**

Trap rock, sand, gravel, coal, coke, ashes, etc., can all be loaded into your trucks at the rate of

**1 cubic yard per minute**

with a

# HAISS WAGON LOADER

Patented

**for a cost of less than one cent per cubic yard for electric or gasoline power**

This loader is different from all other machines of this type — IT DIGS — the others only elevate the material. Write us for more information. Do so while you think of it.

**Geo. Haiss Mfg. Co.**
**146th St. and Rider Ave.**
**NEW YORK CITY**

**In Successful Operation**

## The Negley Excavator

The dragline slack cableway excavator for all operations—discharges fast or slow as desired at the mast or anchor.

**Economy in Operation and Maintenance**

**Indianapolis Cable Excavator Company** 216-18 Mass. Ave. Indianapolis, Ind.

# Why Not Modernize Your Yard?

You may have the latest type of Crushers, Auto Trucks, etc., but if your equipment does not include a

## McMYLER INTERSTATE CRANE

to handle materials, shift cars, place your screens, load trucks and a hundred other things you are losing a legitimate part of your profits. We will be glad to submit figures if you are interested in improving your yard conditions. Bulletin on request.

Address inquiries to the nearest office — The McMyler Interstate Co., Dept. P-5, Cleveland, Ohio — Chicago, New York London

# Gravel Washing Equipment

We are engineers and specialists in designing and equipping complete gravel washing plants. We have had fifteen years' experience in this class of work and during this time have perfected and patented numerous labor-saving, cost-cutting devices, and have gained the reputation of being the leaders in this particular field.

Complete Plant — Dull Designed and Dull Equipped

If you contemplate the installation of a plant, let us show you what we have done, and what we can do. Our engineering department is at your service.

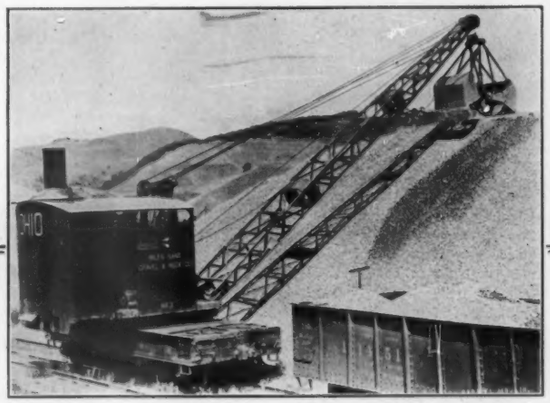
*OUR CATALOG SENT ON REQUEST*

**The Raymond W. Dull Company**

1914 Conway Building — Chicago, Illinois

# *You Wouldn't*

order a duplicate crane if the first wasn't satisfactory? Neither would the Niles Sand, Gravel & Rock Co., Niles, Calif.




We have their order for a second "Ohio" crane—they have given the first "Ohio" three years' hard service test, and it made good.

**90% of the "castings" are basic open hearth steel**

*Write for Catalogue No. 11*

**Ohio Locomotive Crane Co., Poplar St., Bucyrus O.**

| | |
|---|---|
| 30 Church St.....New York | Edward R. Bacon Co.....San Francisco |
| Fisher Bldg.....Chicago | Contractors Equip't Co...Seattle, Portland |
| Home Life Bldg.....Washington, D. C. | W. C. Walpole.....Birmingham, Ala. |
| Oliver Bldg.....Pittsburgh | 950 Rockefeller Bldg.....Cleveland, O. |
| Kelly, Powell, Ltd....Winnipeg, Montreal | |

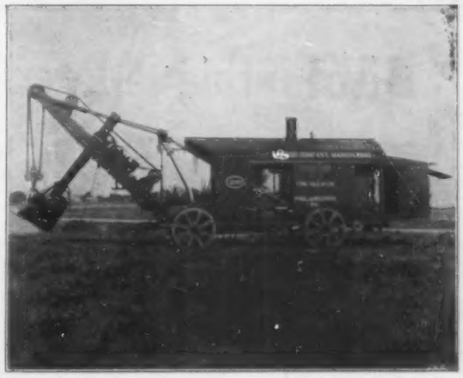
YOU WILL DO BETTER
With an **OSGOOD**

**Osgood "18"** ¾ yd. Traction revolving steam shovel is the practical shovel for the lighter class contracting, such as road building, cellar excavating, sewer trenching, stripping, gravel pits, etc.

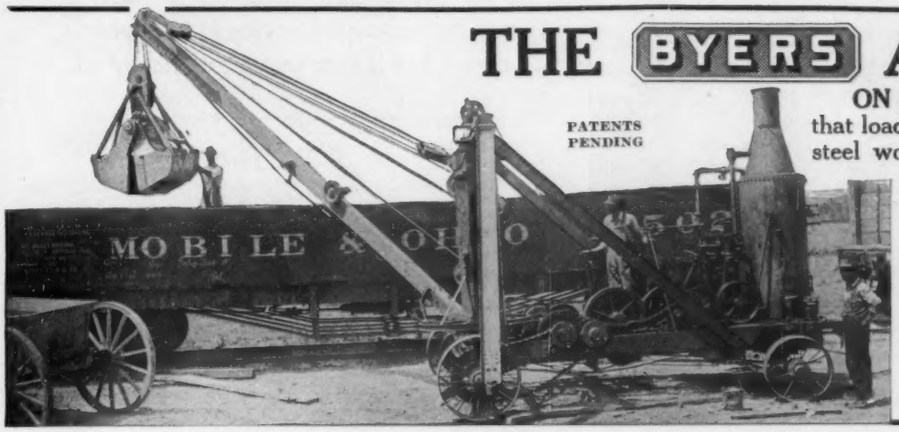
**Osgood "43"** 1½ yd. Traction Steam Shovel with spur gear drive, for quarry and heavy contract work.

Write us your requirements

**THE OSGOOD CO., Marion, O.**



# THE BYERS AUTO-CRANE




**ON BROAD TRACTION WHEELS**
that loads and unloads loose materials, timber, steel work, etc., from cars and wagons and replaces 20 men.

***IS WORTH THE PRICE***

Will travel any place a motor truck will go. Write us.

Chicago Office.....1440 Monadnock Blk.
Cleveland Office.....601 Sincere Bldg.

**The John F. Byers Machine Co.**
310 SYCAMORE ST., RAVENNA, O.
***(Hoisting Engines and Derricks)***

# How Some Sand & Gravel Operators Save Money

½ yard scraper delivering coarse gravel to belt conveyor

The Sauerman Bottomless Power Scraper will deliver to field conveyor, elevator, cars or storage pile. It reduces the number of times that the field conveyor must be shifted and at the same time reduces operating expenses.

1 yard scraper dragging load of sand through cut

**The Sauerman Bottomless Power Scraper**

**½ Yard Scraper With Front and Rear Bridle Chains**

One man operating a double drum hoist controls the digging, conveying and dumping. Our engineers are at your service in the study of sand and gravel problems. Write us.

1 yard scraper delivering sand direct to cars

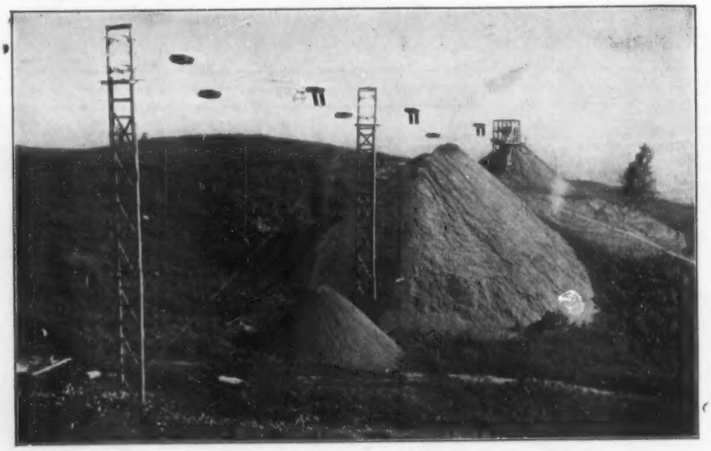
**Sauerman Brothers, 1140 Monadnock Block, Chicago, Illinois**

***Manufacturers of Cableway Excavators, Power Scrapers and Cableway Accessories***

## Distributing Material to Storage Pile or Spoil Bank

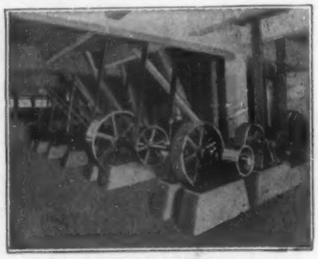
# THE LOOP LINE TRAMWAY

with its continuous procession of barrows may be readily adapted to the distribution of material anywhere along the line by the simple expedient of equipping the barrows with drop bottoms and the track with a movable tripping device which automatically unlatches the bottoms at any desired point. This is but one of many services to which **Loop Line Tramways** are adapted.

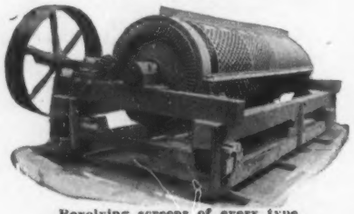


*Let Us Help You with Your Problem!*

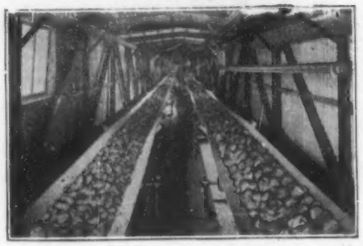
**Ambursen Company**
**61 Broadway New York City**



Complete power transmission equipments of all kinds



Revolving screens of every type for every purpose



Belt conveyors for any material. 10 to 60 inches wide.

## Essential Factors

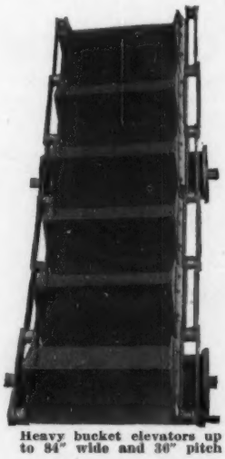
**In Stone and Gravel Plants**

IF you have investigated the most efficient methods of handling your material—if you have consulted with experienced engineers on the subject—and if you are obtaining 100% capacity in production, you are using

**WELLER-MADE EQUIPMENT**

If you are not, let us discuss these opportunities for increased efficiency with you. Write for General Catalog P-20 and further information.

**WELLER MFG. COMPANY**
CHICAGO



Heavy bucket elevators up to 84" wide and 30" pitch

Special enclosed screens for dusty or fine materials

# Watson Construction Company Has Purchased 21 Pierce-Arrow Motor Trucks

This big New York contracting company bought its first Pierce-Arrow two years ago, and has purchased to date 21 five-ton Pierce-Arrow motor trucks.

On the Brighton Beach Speedway job eight of the trucks worked 24 hours a day with three shifts of drivers. They hauled all the material for the work from a tide-water dock six miles away, each truck averaging about 125 miles a day. This remarkable record was made possible by special apparatus which loaded the materials, such as cement, stone, cinders and sand, into the trucks in a few seconds, permitting them to get away on the road again with the least possible delay.

"Our Pierce-Arrow Trucks," says an official of the Watson Company, "have been in service virtually without interruption of any kind. We are convinced that it is sound business to buy the best truck, to put the money into first cost and get it back in performance and service."

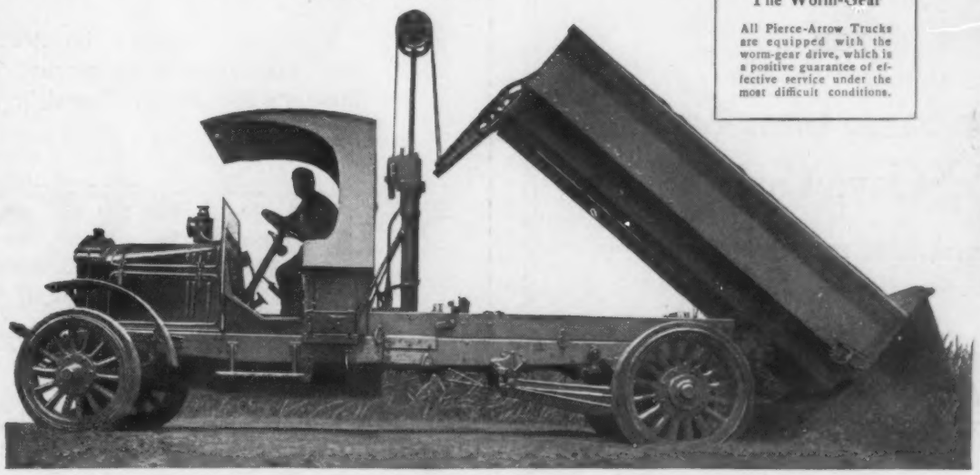
A number of other interesting installations are shown in our booklet, "What Pierce-Arrow Motor Trucks are Doing in the Contracting Business." We shall be glad to send you a copy.

THE PIERCE-ARROW MOTOR CAR CO.
BUFFALO, NEW YORK

PIERCE
PIONEER WORM GEAR

The Worm-Gear

All Pierce-Arrow Trucks are equipped with the worm-gear drive, which is a positive guarantee of effective service under the most difficult conditions.



**Waterproof Your Concrete Blocks and Stucco**

The success of the building block industry depends upon concrete blocks being made dampproof. Stucco work should also be impervious to water and dampness. Permanent and satisfactory results are assured by the use of

## Medusa Waterproofing

Manufactured in powder and paste form. The above residence was waterproofed with Medusa and interior plastering was applied directly to blocks, saving the expense of furring and lathing. The house is perfectly dry.

*Write for our new booklet of illustrations and testimonials*

THE SANDUSKY CEMENT COMPANY
Dept. V-2, Engineers Bldg. CLEVELAND, OHIO

DIRECT HEAT

# DRYERS

FOR

**Bank Sand, Glass Sand, Rock, Clay, Coal, Etc.**

**All Mineral, Animal and Vegetable Matter**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue

S. C.

**AMERICAN PROCESS CO.**
68 William St., NEW YORK CITY

# Your Continual Purchaser

## the Farmer is kept posted by us on Lehigh Construction

A constant demand for concrete work comes from the farm. The farmer who drives in for a few sacks of cement usually drives away with a load of other building material too.

This field, through the most important farm papers, is reached in your interests by Lehigh Advertising.

**LEHIGH CEMENT**

CONCRETE FOR PERMANENCE

MILLS:
Ormrod, Pa.; West Coplay, Pa.; Foglesville, Pa.; New Castle, Pa.; Mitchell, Ind.; Mason City, Ia.; Metaline Falls, Wash.

OFFICES:
Allentown, Chicago, Spokane, New York City, Philadelphia, Boston, Minneapolis, Jacksonville, Mason City, New Castle, Buffalo, Pittsburgh.

**12 Mills—Annual Capacity Over 12,000,000 Barrels**

MAY 26 1916
CLB361061

# Rock Products and BUILDING MATERIALS

INCORPORATING DEALERS BUILDING MATERIAL RECORD

**Volume XVIII.** **CHICAGO, MAY 22, 1916.** **Number 2**

PUBLISHED SEMI-MONTHLY.
DEVOTED TO
Quarry Products, Cement, Lime, Plaster, Sand and Gravel, Clay Products and Building Specialties—Fireproof Building and Road Construction.

THE FRANCIS PUBLISHING COMPANY.
EDGAR H. DEFEBAUGH, Prest.

Seventh Floor, Ellsworth Bldg., 537 So. Dearborn St., Chicago, Ill., U. S. A.
Telephone: Harrison 8086, 8087 and 8088.

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## Echoes from Every Day Life.

Every trade newspaper that cuts any figure in the world, that does honest, constructive work for the industry, is father to many institutions and brother to many men. As in families there are too few bouquets thrown at each other while we are alive. When we find an attractive fellow,—a man who really has a warm heart and wants to help the other fellow, one who is not just guided by every day commercial life in his transactions,—we are all saddened when he passes away. We then realize what he has been to us, but it is too late to tell him face to face what we really think of him. We can only put a bouquet on his grave, shed a tear; and, maybe in a little while, we will forget his family who really should be near and dear to us, because he was one of the bright spots in our lives.

Now and again as the wheels go around we find also a man who really appreciates what an educational factor—what a suggestive and helpful friend a wide awake trade paper has been and can be to him. Our business family has been made happy more than once by an expression of good will and appreciation, for lending a hand to help lead a man from a small salary and small job to successful ownership of a business, not only making a living but adding to his financial resources and making a place for himself on a large scale in commercial life. It is the little kindly words that smooth the path of business life. As we grow older, more of the pals about us are called to their long home, and we begin to think how near and dear the other fellow really is to us when we cannot see him any more.

One of ROCK PRODUCTS AND BUILDING MATERIALS' boys came in the other day. He has been a reader of the paper ever since it started, and had succeeded beyond his expectations. He frankly credited the regular visits of ROCK PRODUCTS AND BUILDING MATERIALS to "putting him on his legs," as it were.

The reason we are getting sentimental, and bring this to your attention is the fact that if the management of ROCK PRODUCTS AND BUILDING MATERIALS has been serviceable in such measure to one man, it can do the same thing for others. We are merely talking to our family, with the assurance that when the road is rocky and the days seem longer, because it is harder to make a dollar out of business, that you have a friend at court. You are always welcome to bring your troubles, your joys, suggestions and questions to the head of our business family. Drop in or write us a letter.—[E. H. Defebaugh, President.

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The northern half of the United States is pretty busy these days manufacturing prosperity by putting in increased acreages of the various crops. Farmers have enjoyed several successive years of plenty, both in the dimensions of the crops harvested and in the selling prices. As a result country communities are exceptionally prosperous, and this is reflected in buildings and permanent improvements of every kind. This is the field of biggest possibilities just now.

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Growing popularity of so-called stucco exteriors when used as the covering for old wooden buildings is making a market for metal lath in all of the enterprising country towns. As soon as one storekeeper improves his front in this way, the idea takes root and soon a whole block is improved in the same way. This is a suggestion to the dealers of the smaller towns to create a good bunch of business by starting one enterprising customer in this way. He can handle the steel specialty profitably, and it makes a sale for cement, lime, sand and screenings, as well as other items that are sure to come up, once your customer gets busy with visible improvements.

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All that we have said in the past about the need of equipping quarrying and crushing operations with every possible labor saving machine tool is very forcefully illustrated at the present time in many localities. Quarry labor, once in very abundant supply, has disappeared altogether, so that some of the most extensive as well as the smaller operations have either been forced to close down or have been unable to make a start as yet. Wages have been advanced again and again without effect. The men are scarce and they know it, and they are working that knowledge for all it is worth. Equipment, the best available, without regard to the first cost is the only way out for those who have a demand for their product and must run their plants. Even if the labor shortage in your quarry has not bumped you a body blow yet, be sure that it is coming sooner or later, with the odds heavily on sooner.

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Sewer pipe quotations seem to be getting in the same class with railroad tariffs, *i. e.*, ingenious contrivances to deceive. Even the man that makes them don't know how to decipher their meaning. The juggling with discounts when invented by the Venetians in the middle ages was attributed by learned men of those times as a work of the devil. It was customary then to credit all things known to be bad to that individual. Perhaps the list with its discounts is a holdover from the dark ages. If the sewer pipe manufacturers really expect to do fair and reasonably profitable business with the dealers, why don't they get down to brass tacks and honorably quote a list of prices and then proceed to do business upon twentieth century methods? That old plan of first loading up the dealer so as to get his money, and then underquoting direct upon every possible occasion will never work any more so that anybody can notice it. It is just about as obselete as the crossbow or the stage coach.

# WITH YOU and ME

The eastern sales office of the American Pulverizing Co., which is in charge of George C. Videtto, eastern sales manager, is located at 207 Fulton building, Pittsburgh, Pa. Mr. Videtto, who was formerly secretary of the company, will demonstrate the merits and manage the sales of the American ring pulverizer in Ohio, Indiana, Pennsylvania, West Virginia, Maryland, New York, New Jersey and New England.

M. J. Wann, manager of the L. B. Grant Lumber Co., Clinton, Okla., is taking a vacation and looking after some irrigated land he owns in Idaho. He returns to Clinton about June 1. W. M. York, a member of the Grant forces, is relieving Mr. Mann.

On May 22 at University Place, Neb., Mrs. Zilpah M. Stowell was married to Erwin M. La Grange, of Fullerton, Neb. After a wedding trip to the Pacific coast, they will be at home at Fullerton, where Mr. La Grange conducts his lumber business.

F. A. Good, ex-president of the Nebraska Lumbermen's Association, has recently appeared in print with an article on trade acceptances, "Are We Plowing With a Crooked Stick?" "Is Our Commercial System Obsolete?" Good makes a very convincing argument for trade acceptances in material business.

E. Z. Cornwell, of the Portland Cement Association staff, has been spending a few weeks in the West, doing work among the high schools and colleges. He has been paying particular attention to Missouri, Kansas and Nebraska. At each school he does practical work in concrete before students and vocational instructors. The courses offered in the polytechnical institutions and manual training schools have been highly theoretical, and real cement and real concrete is needed to bring home the facts of this intensely practical subject.

Charles P. Light, for several years associated with the American Highways Association as field secretary, ceased to be one of that family May 1. He is now representing, in the capacity of manager, the Fidelity Mutual Life Insurance Co., of Philadelphia, at Washington, D. C. Certainly our industry has many good wishes for Charles P. in his new connection, for he has been a bright and shining "Light" among us for many years past.

Mel Taylor, of Taylor & Sons Lumber and Implement Co., Lyons, Kan., is able to be out again after a serious illness.

Elmer Stoddard has been made manager of the Stoddard Lumber Co. at Villisca, by the Fuller Lumber Co., Princeton, Mo. Eugene Stoddard, who managed the Stoddard Lumber Co., is to return to Villisca in a few days from San Antonio, Texas, where he has been for some time recuperating after a serious attack of lung fever. He expects to go west after spending a few days at home.

A. E. King, formerly material man for the Terminal Co., is now handling city sales for the Prince-Johnson Limestone Co. at Kansas City.

J. R. Ricketson, of Ricketson & Schwartz, well known Milwaukee, Wis., building supply house of "Who Furnished the Brick" fame, is spending a few weeks in the south.

John F. Lent, president of the Traffic Club of Pittsburgh, as counsel for the Ohio Sand Traffic Association, which is composed of producers and shippers of sand at Youngstown, Zanesville, Columbus, Conneaut, New Lexington and Cleveland, Ohio, has filed with the Public Utilities Commission of Ohio a complaint against the Pennsylvania Lines West, the Baltimore & Ohio, the Erie and the Wheeling & Lake Erie railroads, alleging that these roads are charging for transportation of sand in carload lots unreasonable and unjust rates. He asks that the offending roads be required to publish and maintain for the shipment of sand specified rates that will be just and equitable and that an order be made supplying maximum rate for the service.

JOHN C. LARIMER,
Popular Wisconsin Salesman.

On the ground that freight rates in Ohio on sand in carloads are excessive, the Ohio Sand Traffic Association, composed of some of the leading concerns in the state, has asked the Ohio Public Utilities Commission to readjust the rates on an equitable basis. The Burton-Townsend Co., the Central Silica Co., the Interstate Sand Co., all of Zanesville, the Summit Silica Co., of Barberton, and several Cleveland companies are members of the association. It is declared that the railroads have made rates discriminating against Ohio sand companies in favor of sand shipped from outside points.

John G. Livar, 172 Front street, Memphis, Tenn., is contemplating installation of machinery for washing sand and gravel to be used in concrete work.

The New Idea Plaster Board Co., of Fond du Lac, Wis., which manufactures a new type of plaster board, has filed an amendment to its article of incorporation increasing the capital stock from $5,000 to $40,000, and changing its location to South Milwaukee, Wis.

At Ashland, Ky., the Red Brick Co., has leased the plant of the O'Kelly Brick Co., and will make 50,000 brick a day.

John Zurn, of Hartford, Wis., has opened a gravel pit north of Pine Lake. He is being assisted by Frank Pondelick. The new concern is already enjoying a good business.

Members of the Cincinnati, Ohio, building trades, especially handlers of sand and gravel, are preparing to enter a vigorous protest against the new tariffs recently issued by railroads for enforcement in Ohio, announcing an advance of fifteen per cent on sand and gravel when loaded in box cars. It is declared that the use of box cars is a matter of necessity under present conditions, when any kind of rolling stock has to be accepted, and that there is no reason for imposing a penalty on the use of these cars.

The Interstate Commerce Commission last week denied the application of the National Tube Co. and other manufacturers of iron and steel in the Pittsburgh district for a modification of its order for the imposition by the railroad of charges for hauling away from their furnaces and mills the slag. This decision is of importance to all manufacturers who make a cement from slag and every furnace and mill in the Pittsburgh district is affected.

H. J. Peters Lumber & Coal Co., Henderson, has succeeded the J. P. Pauley Lumber Co.

## LOUISVILLE BUILDERS' EXCHANGE.

A meeting of the Louisville Builders' Exchange will shortly be held to discuss the recently enacted workmen's compensation law, effective Aug. 1. William M. Duffy, a local attorney and member of the legislature, will be present to explain the workings of the law, which is of great interest to all contractors and builders. One of the most interesting sections of the bill, from the contractors' angle, is a section relative to contractors and subcontractors. A contractor is liable for injuries to any employe of a sub-contractor where the subcontractor is not carrying insurance, and where an employe of one sub-contractor is injured by the negligence of employes of another sub-contractor the injured employe may elect to sue either of the sub-contractors or the general contractor. There is some talk of the exchange organizing a mutual insurance company to insure contractors, builders, etc.

The cement plant at St. Mary's, Ont., is being enlarged by the addition of a third kiln and the plant at Owen Sound has reopened.

## KANSAS AND OKLAHOMA DEALERS MEET.

A unique meeting of building material dealers was held in Wichita, Kan., May 17 and 18. Wichita is the headquarters of 200 branch yards, operating in fourteen states. Heads of these concerns conceived the idea of a lumbermen's rally and offered a good time, a convention, and a school of business lectures to dealers in Kansas and Oklahoma. There was a splendid response, 700 retailers attending, and each visitor was well repaid for the time spent there. Among the lecturers were L. R. Putman, P. D. Boman and J. R. Moorehead. F. A. Amsden was general chairman. Chairmen of other committees were: H. E. Case, Henry Comley, J. W. Metz, F. W. Oliver, J. H. Engstrom, T. M. Deal, W. H. Comley and J. S. Prestridge.

# OUR MANY BUSINESS PROBLEMS.

(By Edward N. Hurley, Vice Chairman Federal Trade Commission, Washington, D. C.)

I am very glad to be with you tonight and to meet the members of the Association of American Portland Cement Manufacturers. When my personal friend, John R. Morron, wrote me asking if it would be posible for me to talk to you, I replied by return mail that it would be a great pleasure to do so, first, because I wanted to grant Mr. Morron's request, and, second, because the opportunity of meeting a group of business men who are doing big things always appeals to me.

It has been my good fortune the past year to have met almost all of the business men appearing before the Federal Trade Commission. They have presented many of their problems, and as a business man it has been particularly gratifying to me not to have had a question presented by them that did not show in every way honesty of purpose and straightforwardness.

Many of the economic questions before the American manufacturer today are not so serious or so complicated that they cannot be worked out on a sound, practical basis. Within a reasonable length of time government and business will undoubtedly reach a better understanding, and both recognize that in order to do big things they must have the same object in view and have confidence in each other. I believe these conditions are being realized today, and if cooperation continues the problems will be easy to solve and will make the effort worth while.

The Chamber of Commerce of the United States has a Federal Trade Committee of which Harry A. Wheeler of Chicago is chairman. Last autumn this committee sought a conference with the Department of Justice with a view to ascertaining the probable attitude of the Department of Justice with respect to future prosecutions under the anti-trust laws. It was explained to the attorney general by representatives of the committee that if he would express himself, it might be regarded as reassuring to the public mind and at the same time dispel some uncertainty which heretofore has been said to exist. A number of conferences were held and the result was that the attorney general made a statement in which among other things he outlined the policy of the department as regards the method of enforcing the law in those cases which are admittedly doubtful. He stated that where men have entered into a transaction, believing in good faith that the transaction is a lawful one, and subsequently, upon complaint made, the department reaches the conclusion that the transaction was not in accordance with the statutes but is yet satisfied of the good faith and innocent purpose of the parties and can see that there was ground for the view upon which they acted, it has not been and will not be the policy of the department to invoke extreme penalties against them. In such a case the department would consider that the just and appropriate and quickest way of enforcing the law would be by a civil proceeding in which the question involved could be contested or a consent decree entered, according as the defendants desired; or by a notice to the parties, of the department's conclusion, with opportunity to abandon or modify the transaction. It was further stated by the attorney general that no proceeding is ever instituted until after the most painstaking and exhaustive investigation, in the course of which the person or corporation against which complaint is made is given full opportunity to submit its defense before any action is taken.

Groups of busines men are constantly coming before the Federal Trade Commission, asking for information as to how they can improve conditions. Manufacturers come to us protesting against overproduction or complaining against their competitors, claiming unfair methods of competition and asking us for relief. They assert their competitors are selling goods below cost and ruining the industry in which they are engaged. For these evils, often of many years' standing, they request relief.

### Lack of Adequate Information.

The Federal Trade Commission, no matter how anxious it is to be helpful to those laboring under these industrial disadvantages, is confronted at the outset with a lack of adequate information regarding industry.

With all the attention that has been given to business the past fifteen years it is a remarkable fact that today there are no comprehensive data available, no constructive material at hand to furnish to a manufacturer, merchant or trade association desiring to improve the unsatisfactory conditions in its industry. Without such data it is impossible to make recommendations to Congress for helpful constructive legislation.

From the government the railroads receive statistics giving them a broad view of the transportation situation of the country. The farmer is told frequently the conditions of the crops, so that he may know how and when to dispose of his surplus products. The health of his stock is under the jurisdiction of the government. The banker is furnished details as to the financial conditions in the country, by the treasury department. These are helpful fields of government activity and the people of the country are heartily in accord with this work.

Manufacturers and merchants who are merchandising the farmers' products, shipping their goods over the railroads, depositing their money in the banks, and meeting the payroll of thousands of employees—these, too, should be furnished with data and information regarding their respective industries.

In order to coöperate intelligently with the manufacturers and merchants of the country, the Federal Trade Commission must have the facts about industry. With this thought in mind we recently submitted the manufacturers of the country a form asking them to answer a few questions in regard to their business. Take the cement business for example. We hope to show for this industry the aggregate capital stock of all the cement manufacturers in the United States, the bonded and other indebtedness, the accumulated surplus or the earnings invested in the business, the net sales and the net profits. We will also show in the aggregate the depreciation charged off and the losses from bad debts. The amount of depreciation charged off will indicate in a measure whether this important item is being treated in a practical way.

These figures, when compiled, will show whether or not the industry is in a good condition. If the money invested in the business is not yielding a fair return, the industry is not very healthy. It may be caused by overproduction and unremunerative prices, or it may be that the business is not being as efficiently conducted as it should be.

If, after having these facts before us, we find that the cement industry requires further attention and should desire our coöperation, we will be able to discuss intelligently with cement manufacturers or the Association of Portland Cement Manufacturers remedies that may be helpful.

The subject of more uniformity in cost finding is one that is at present receiving careful attention on the part of many manufacturers and trade associations. A number of trade associations are in this way achieving marked success in strengthening their industries. It has been demonstrated that knowledge of cost determined by uniform practice will improve trade conditions to a remarkable degree. By a uniform practice I mean a common classification of costs, both manufacturing and selling, a uniform method of distributing overhead expense, and a uniform method of providing for a depreciation, with rates more or less standardized.

If this condition existed, your association could then gather production statistics which would be comparable and which would be valuable to you for your information and guidance. You manufacturers could then talk the same language. You would be in a position to profit from each other's experience, to conduct your plants more efficiently, and to price your product intelligently.

If this great cement industry is successful, your employees, your stockholders, your customers and our country generally would be materially benefitted. It is time for the government and business to realize that they have here as well as in other industries important tasks before them that can be successfully worked out by friendly coöperation.

### Standard Accounting Methods.

When business was done on a large percentage of profit, questions of accurate costs and of operating efficiency were not so important; but in most lines of industry today the large percentage of profit has passed. Manufacturers are working on smaller margins and must absolutely know what their goods cost. With margins of profit so close, any unreliable method of arriving at cost of production must be eliminated.

It is a fact well understood among business men that the general demoralization in a large number of industries has been caused by firms who cut prices, not knowing what their goods actually cost to manufacture. The cost selling also, which is equally important, is almost wholly lost sight of. And the officers of the companies who are cutting prices right and left, irrespective of their costs, fair to their customers, stockholders, or competitors?

Quality and service are becoming greater factors in the field of merchandise. Long after the price of a product is forgotten the quality of that product is remembered.

A manufacturer who does not know with a close degree of accuracy what it costs him to produce the different articles he manufactures, and what it costs him to sell them, is not in a position to meet competition intelligently, and invites business disaster.

Many of the larger manufacturers have thorough cost accounting systems, which they recognize as necessary in order to give them the information essential to successful management. On the other hand, the number of small manufacturers who have no adequate cost accounting system, and who price their goods arbitrarily, is amazing.

Proper accounting for the smaller manufacturer is most essential. It is necessary for his success that he know on what particular article he is making a fair profit and on what he is making only a narrow margin of profit or losing money. If he has this information he can concentrate on the manufacture and sale of the product on which the profits are satisfactory.

Whole industries, in many instances, are suffering from a general lack of intelligent knowledge of cost.

### How the Commission Can Help.

How can the Federal Trade Commission help to improve this situation?

The commission has no intention and no desire to use compulsory methods. But it does hope to reach the desired end by encouraging improvements in accounting, and by assisting in devising standard systems, either at the request of individual merchants and manufacturers, or through the association that represents the industry.

It is recognized that no one standard system of accounting is applicable to all classes of business, but that special systems are required for each group or class of commerce and industry.

The commission, furthermore, while recognizing the commercial advantages to be derived from uniformity of systems, does not advise making a change where systems already installed give adequate information and are economically operated.

All of us are talking a great deal these days about mobilizing American resources. Mobilizing means simply organizing to achieve a common purpose. Many manufacturers seem prone to associate mobilization with expansion. I venture to suggest that you gentlemen may profitably devote some attention to the psychology of this error, with a view to getting the true situation indelibly impressed on the minds of the men of the business world.

I hope, now that our business has become normal

(Continued on Page 37.)

Paper read before quarterly meeting of Association of American Portland Cement Manufacturers, Chicago, Ill., May 10.

# The RETAILER

## Proper Yard Layout Reduces Handling Cost

Because of the nature of the materials handled, one of the most momentous problems confronting the retailer of builders' supplies is the question of how best to arrange the yard and warehouse and the location of these places for storing materials in comparison to the track on which they are brought to the retailer. Often the warehouse is placed alongside of the track so that the cars can be unloaded directly into the warehouse. This is practical economy when all of the materials so received are first stored in the warehouse and afterward sent to the various jobs for which they are ordered.

The objection to an arrangement of this nature is found in the inefficiency of the system when deliveries are to be made direct from the car to the job. Under this system it is necessary to truck the material from the car through the entire width of the warehouse on to the wagon. As can readily be understood, this requires double handling of the material, in addition to the time consumed in loading it on to the truck and carting it across the warehouse.

A much more practical plan is to arrange the switch track so that an open space is available on the opposite side of the car from the warehouse. It may seem strange, but it is nevertheless a fact, that a great many retailers of building materials must be taught this little lesson through the school of experience. When yards are first designed, the track is usually located as near to the railroad's right-of-way as possible and, naturally, on the edge of the property of the retailer. The open space in the yard for handling such materials as can be stored on the ground is usually located on the far side of the warehouse and a great distance from the track.

The new yard of Edward M. Baltes & Co., located on the Lake Erie & Western and the New York Central R. R. in Ft. Wayne, Ind., is an example of an up-to-date arrangement in locating the warehouse and ground storage space. The Baltes company has a space 300 feet long and 100 feet wide adjacent to the right-of-way of the railroad, and into this space is run a spur track which leaves a space of twenty-five feet from the edge of the property to the track. In this space, which has a floor of creosoted timbers, are stored such bulk materials as crushed stone, sand and gravel. Between these storage piles and the spur track there is a roadway wide enough to permit two wagons. The object of this is to enable wagons to pass one another. Fortunately, for the Baltes company, the switch track of the railroad company is located adjacent to the edge of this property and the sand and stone bins can be supplied with materials from cars placed on the railroad company's track. This leaves the spur track open for the accommodation of such material as must be shipped in box cars and which can be loaded direct from the cars on to the wagons, or can be unloaded directly into the warehouse which is on the opposite side and flush with the track. The floor of the warehouse is equally as high as the floor of a box car, so that materials can be trucked directly from the car to the warehouse, where they can be placed in reserve as stock.

The warehouse does not extend the entire length of the property, but runs back a distance of about 140 feet and is used for the storing of face brick, roofing materials, specialties, bulk lime and commodities shipped in bags, such as cement, hydrated lime, hard wall plaster and fire clay.

The open yard in back of the warehouse is used for the purpose of storing sewer pipe, drain tile, wall coping, partition tile and other clay products which may be stored in the open. To store these commodities with the least amount of handling, the cars in which they arrive are placed on the track opposite the open space and nearest to that end of the yard in which such materials are placed.

This yard is equipped with a Howe scale so that all materials can be weighed and billed direct to the job without the necessity of sending them to the main office of the firm, which is located a half mile away and in order to reach which the St. Marys river must be crossed. This naturally necessitates an up-hill pull and would mean less efficiency on the part of the haulage equipment of the firm.

The main office of the company is located on the east side of the river and close to the business section of the city. The main warehouse and storage yard of the company is located in connection with this office. This is the original site on which M. Baltes, the founder of the company, first located his business.

All samples and displays of materials are to be seen and inspected in the office of the company, and at night the wagons and teams are all cared for at this point. One of the features of the main yard is an outdoor display of face brick, which is shown in one of the accompanying illustrations.

While M. Baltes is still a large stockholder and may be seen daily around the office, the active management of the firm is under the supervision of his son, Edward M. Baltes, who has as his associate Theodore C. Schwier, the live and aggressive chairman of District Committee No. 2 of the Indiana division of the National Builders' Supply Association.

In commenting on the layout of the new yard, Edward M. Baltes says: "It is the most practical manner in which to lay out a yard, in my opinion. Experiences of the past suggested this arrangement of the spur track, warehouse and disposition of the outdoor storage spaces. This yard is in charge of a foreman who receives his instructions from the main office and who has entire supervision over all of the warehouse and yard hands, as well as the teamsters operating from this yard. Through this method of receiving and handling materials, we have been enabled to materially reduce our handling costs and to give our customers prompt service on ordinary as well as special deliveries."

Edward M. Baltes & Co. carry a full line of materials and specialties, such as cement, lime, plaster, face brick, sewer pipe and other clay products, fire clay, mortar colors, coal, chutes, wall boards, etc.

### WOULD CHANGE OAKLAND LAW.

A strong effort is being made by builders and others and by the Chamber of Commerce of Oakland, Cal., to secure a modification of the Oakland building law as it relates to the downtown business zone of the city. In this zone only class A and class B buildings may be erected. It is claimed that the results show that the law has acted as an effective check to all new building in the district, and, instead of being a precaution against fire, is a menace in that it prevents the replacing of old low grade buildings with new class C structures. It is said that no other city on the Pacific coast restricts the territory in which class C buildings may be erected, and that possibly no city in the country aside from Philadelphia, has such a law.

The H. S. Thompson Co., of New Richmond, Wis., has disposed of its retail lumber yard to J. B. Grinde, of Minneapolis, Minn. Mr. Grinde will add a complete line of building material.

OFFICE AND MAIN YARD OF ED. M. BALTES & CO.

REAR VIEW OF NEW YARD.

## BE PREPARED TO COLLECT.

Every retailer of building materials in the country is occasionally called on to sell and deliver small orders, such as a few bags of cement, lime or plaster, a few hundred pounds of sand or a few brick or partition tile. These orders are usually for repair work and do not run into large sums of money. Largely through a habit, and sometimes through the belief that collections are simplified, these accounts are placed on the books rather than delivered C. O. D.

Retailers who have studied this end of the business state that it is as hard and sometimes harder to collect these small accounts than to collect bills of material supplied for the entire erection of buildings, and have come to the conclusion that the cash or C. O. D. basis is the only one on which to accept these small orders.

The argument has been presented that ofttimes when the driver hands the lady of the house a bill he is usually given a ten or twenty-dollar bill, which he cannot change, and consequently, leaves the office to collect the amount. To offset this undesirable feature of collecting small amounts, a driver should be given a sufficient amount of currency to exchange a bill, and thereby save the institution the time and trouble of placing the account on the books, and later, of collecting it. As an example of how this can be worked out, we will take the hypothetical case of a driver who is sent to a home with goods and a bill calling for $5.34. If he is given at the same time $4.66 in currency he is in a position to receive payment for the bill, even though the lady should present him with a ten-dollar bill or smaller amounts, such as six dollars or seven dollars. The collection of the bill has caused him no loss of time, because he must at least get a receipt for the material delivered and he has saved the bookkeeping and collection departments the trouble of carrying the account for an indefinite period and saved the firm the embarrassment usually incidental to collecting small accounts.

## CAR SHORTAGE LESS SEVERE.

The statistical statements of the American Railway Association, as furnished by Arthur Hale, chairman of the committee on relations between railroads, shows a decrease in the total shortage of freight cars on May 1, of 18,586 when compared with the shortage registered on April 1. There was, however, reported a shortage of 29,050 cars, which were divided as follows: box cars, 20,508; flat cars, 1,286; coal and gondola cars, 5,139; miscellaneous cars, 2,117.

The surplus of freight cars on May 1 was 59,657 and showed an increase of 7,383 over April 1. The total surplus increase largely consisted of box cars, west and northwest. The southeast, which has reported a considerable surplus of box cars for several months, has showed a reduction of surplus cars of this class of equipment. The surplus for May 1 was divided as follows: box cars, 18,241; flat cars, 3,966; coal and gondola cars, 17,814; miscellaneous cars, 19,636.

Although these figures show an improvement in conditions over a month ago, comparisons with May 1, 1915, are evidences of a most undesirable condition. On May 1, last year, there was a shortage of but 966 cars of all classes, while on the same day there was reported a total surplus of 292,269 cars.

## BIG COMPANY MAY LOSE NAME.

San Francisco, Cal., May 17.—Some mystery attaches to the incorporation a few days ago of the Henry Cowell Lime & Cement Co., with an authorized capital stock of $25,000 and a paid up capital of $30. The company is incorporated by C. B. Blessing, J. H. Smith and M. G. Clark, none of whom are said to be known in connection with the lime or cement business and none of whom will give out any information as to the objects and purposes of the new incorporation.

The mystery comes in in the fact that there has long been another Henry Cowell Lime & Cement Co. here, one of the biggest producers of lime and cement in the entire Pacific coast territory. This company, in common with a large number of other corporations, neglected or refused to pay the corporation tax levied by the last legislature. With the others, the company was denied the right to do business in the state and it is alleged that the failure to pay the tax forfeits the charter of the company; and that, therefore, the new incorporation may legally hold the name.

The old company, whose tax for last year was $1,002, has now offered the state treasurer $3,056 in settlement of last year's tax and penalty and of this year's tax as well, but the offer has been refused, as it is declared that the company's charter has been forfeited. It is intimated that the old company will get out an injunction to prevent the new company from using the name. So far as can be learned, the incorporators of the new company are not acting for the owners of the old one in any way.

## LIBERTY, MO., PLANT IDEALLY EQUIPPED.

James Costello, a director of the Southwestern Lumbermen's Association, has just completed improving in his plant at Liberty, Mo. The yard can well serve as a model for material dealers of the country. Some of the features include concrete pavements and driveways throughout the plant, hot water heat in the office, oak bank fixtures, fireproof brick and concrete vaults and private office.

## BUILDING MATERIALS IN DOMINICAN REPUBLIC.

Reinforced concrete construction is becoming increasingly popular in the Puerto Plata district, and is used for almost all new buildings of any size, according to Consul Frank Anderson Henry, Puerto Plata. Building materials are at times handled by all the important general merchants here. American exporters may be interested in the projected new customhouse and wharf. The plans and arrangements for these are in the charge of the Oficina de Obras Publicas at Santo Domingo City.

NEW YARD OF ED. M. BALTES & CO. AT FORT WAYNE, IND. NOTE ARRANGEMENT OF TRACK, WAREHOUSE AND GROUND STORAGE SPACE.

## FRENCH PLAN TO ORGANIZE TRADE.

Perhaps the most important building-trades publication in France, Le Batiment, has just announced an interesting project for the establishment of a general federation, co-operating with the government, for organizing the imports of materials necessary for building and construction enterprises, in order to facilitate the prompt resumption of normal economic life, says Commercial Attache C. W. A. Veditz, of Paris. The announcement of this project has the following statements:

The ordinary manufacturer, and even the wealthy merchant, can only buy for himself in limited quantities. The best organized societies can not handle large transactions involving several millions. What can not be done by individuals or by small organizations can, however, be accomplished by a powerful general organization.

We shall have to buy the necessary material to the amount of hundreds of millions of francs, and these purchases can not be effected without the official coöperation of the government.

It is necessary the State should make an immediate inventory of the resources that France now possesses in materials of all kinds, precisely as would be done by a well-administered large private organization, in order to estimate the extent and character of necessary imports. These imports should comprise:

(1) The material necessary for putting into good condition our railroads, and to build the railroads of Morocco; for it is first of all indispensable to perfect our transportation facilities.

(2) The materials necessary for rebuilding, especially homes, buildings and workshops.

(3) The machines, motors and all that would be necessary to properly install our factories and workshops.

(4) The primary materials necessary for manufacture and trade.

It is in the interest of each individual to determine immediately the approximate quantities of goods which he will need, or merchandise which he can furnish, or financial resources of which he can dispose, and to indicate the credit of which he may have need. These three elements constitute the basis of a general organization.

The foregoing announcement is particularly interesting in view of the fact that materials for construction in all lines will have to come in large measure from the United States.

## LOS ANGELES BUILDING ORDINANCE.

The draft of the new building ordinance proposed for Los Angeles, Cal., has been submitted to the city council after two years work. It will now go to the committee on public safety, which will hold public hearings before recommending the ordinance to the city council for adoption. It is claimed that the new ordinance will secure better protection against fire and will at the same time greatly reduce the cost of construction.

The Steiner Coal Co., Canton, Ohio, has announced plans for the construction of a large storage and handling plant on a six-acre tract which it owns on the Stark Electric railroad near Canton. A total investment of $100,000 will be represented by the plant when the work is finished. Spurs and sidetracks will give ample facilities for handling materials by rail, while buildings will be constructed to accommodate the various lines handled by the company, including lime, cement, stone, brick, tile and sewer pipe, in large quantities. In fact, one of the principal objects aimed at by the company is to be able to store quantities of material, in order to be independent of any temporary interruption to railroad service.

Mt. Gilead, O., May 15.—An order for 68,000 sacks of Universal Portland cement, which will be used in road work, has been secured by Wilson & Mathews, local hardware and material dealers, from the Grohne Construction Co.

# Don't Fool Yourself—Know Your Costs

BY R. P. STODDARD, SECRETARY, S. A. F. E.

A thorough discussion of cost accounting at the two recent Cleveland meetings of the Supply Dealers' Board of the S. A. F. E. brought out some interesting figures. Those who attended the meetings say they would not have missed them for the price of a year's dues in the board.

With figures prepared by Earl Ross, of the The Cuyahoga Builders' Supply Co., as a basis eleven other members submitted cost percentages as applied to eight commodities, previous to Jan. 1, 1916.

These figures were tabulated to arrive at averages that may safely be considered representative of the conditions in Cleveland, both of "small" dealers and "big" ones.

Unless you know, absolutely, the cost of handling your business, you do not know whether you are making or losing money. Don't fool yourself.

In the first column of the following table are given Mr. Ross' figures; second column, the average of eleven other dealers ranging from one yard to ten yard plants; third column, percentage to add for labor increase since Jan. 1; fourth column, percentage to add that would apply upon a ten per cent increase in teamsters' wages; fifth column, cost April 15.

| | Ross, Jan. 1, 1916. | Average, Jan. 1, 1916. | Increase for Labor, 28.6%. | Increase for Drivers, 10%. | Average Cost Apr. 15, 1916. |
|---|---|---|---|---|---|
| **Bulk Lime—** | | | | | |
| Unloading and yard labor | .015 | .016 | .004 | ... | .02 |
| Cartage | .005 | .059 | ... | .006 | .065 |
| Poor accounts, ½% | .002 | .002 | ... | ... | .002 |
| Interest, ¾% | .003 | .003 | ... | ... | .003 |
| Shrinkage, 1% | .004 | .004 | ... | ... | .004 |
| Overhead, 7% | .028 | .028 | ... | ... | .028 |
| Unpro. Exp., 3% | .012 | .012 | ... | ... | .012 |
| Discount Diff. | .003 | .003 | ... | ... | .003 |
| | .117 | .132 | | | .137 |
| **Stone—** | | | | | |
| Unloading and yard labor | .20 | .21 | .06 | ... | .27 |
| Cartage | .60 | .62 | ... | .062 | .682 |
| Poor accounts, ½% | .01 | .01 | ... | ... | .01 |
| Interest, ¾% | .015 | .015 | ... | ... | .015 |
| Shrinkage, ½% | .01 | .01 | ... | ... | .01 |
| Overhead, 7% | .14 | .14 | ... | ... | .14 |
| Unpro. Exp., 3% | .06 | .06 | ... | ... | .06 |
| | 1.035 | 1.04 | | | 1.19 |
| **Sand—** | | | | | |
| Unloading and yard labor | .16 | .17 | .048 | ... | .218 |
| Cartage | .60 | .63 | ... | .063 | ... |
| Poor accounts, ½% | .009 | .009 | ... | ... | .009 |
| Interest, ¾% | .013 | .013 | ... | ... | .013 |
| Shrinkage, ½% | .009 | .009 | ... | ... | .009 |
| Overhead, 7% | .122 | .122 | ... | ... | .122 |
| Unpro. Exp., 3% | .052 | .052 | ... | ... | .052 |
| Discount Diff. | .02 | .02 | ... | ... | .02 |
| | 9.85 | 1.02 | | | 1.14 |
| **Cement, Bbl.—** | | | | | |
| Unloading and yard labor | .035 | .042 | .012 | ... | .054 |
| Cartage | .16 | .16 | ... | .016 | .176 |
| Poor accounts, ½% | .01 | .01 | ... | ... | .01 |
| Interest, ¾% | .015 | .015 | ... | ... | .015 |
| Shrinkage, ½% | .01 | .01 | ... | ... | .01 |
| Overhead, 7% | .14 | .14 | ... | ... | .14 |
| Unpro. Exp., 3% | .06 | .06 | ... | ... | .06 |
| Tax | .04 | .04 | ... | ... | .04 |
| | .47 | .49 | | | .505 |
| **Tile, 5x4x12—** | | | | | |
| Unloading and yard labor | 1.50 | 1.68 | .48 | ... | 2.16 |
| Cartage | 2.50 | 3.01 | ... | 3.01 | 3.311 |
| Poor accounts, ½% | .105 | .105 | ... | ... | .105 |
| Interest, ¾% | .157 | .157 | ... | ... | .157 |
| Breakage | .21 | .21 | ... | ... | .21 |
| Overhead, 7% | 1.47 | 1.47 | ... | ... | 1.47 |
| Unpro. Exp., 3% | .63 | .63 | ... | ... | .63 |
| Discount Diff. | .10 | .10 | ... | ... | .10 |
| | 6.67 | 7.34 | | | 8.14 |
| **Brick—** | | | | | |
| Unloading and yard labor | .50 | .70 | .20 | ... | .90 |
| Cartage | 1.75 | 2.08 | ... | 2.08 | 2.28 |
| Poor accounts, ½% | .08 | ... | ... | ... | .08 |
| Interest, ¾% | .12 | ... | ... | ... | .12 |
| Breakage and allowance, 1% | .16 | ... | ... | ... | .16 |
| Overhead, 7% | 1.12 | ... | ... | ... | 1.12 |
| Unpro. Exp., 3% | .48 | ... | ... | ... | .48 |
| Discount Diff. | .08 | ... | ... | ... | .08 |
| | 4.29 | 4.89 | | | 5.22 |
| **Plaster—** | | | | | |
| Unloading and yard labor | .225 | .23 | .066 | ... | .296 |
| Cartage | .75 | .78 | ... | .078 | .858 |
| Poor accounts, ½% | .038 | .038 | ... | ... | .038 |
| Interest, ¾% | .056 | .056 | ... | ... | .056 |
| Shrinkage, ½% | .038 | .038 | ... | ... | .038 |
| Overhead, 6% | .525 | .525 | ... | ... | .525 |
| Unpro. Exp., 3% | .225 | .225 | ... | ... | .225 |
| Discount Diff. | .030 | .030 | ... | ... | .03 |
| | 1.892 | 1.69 | | | 2.07 |
| **Sewer Pipe—** | | | | | |
| Unloading and yard labor | .015 | .015 | .004 | ... | .019 |
| Cartage | .03 | .033 | ... | .003 | .036 |
| Poor accounts, ½% | .0016 | .0016 | ... | ... | .0016 |
| Interest, ¾% | .0024 | .0024 | ... | ... | .0024 |
| Breakage, 1% | .0032 | .0032 | ... | ... | .0032 |
| Overhead, 3% | .0096 | .0096 | ... | ... | .0096 |
| Discount Diff. | .003 | .003 | ... | ... | .003 |
| | .087 | .091 | | | .97 |

### Schedule of Wage Increase.

An increase in wages to your employees will cost you:

| No. Men. | Increase per Day. | Daily Cost. | Yearly Cost. |
|---|---|---|---|
| 10 | $0.25 | $ 2.50 | $ 750 |
| 20 | ..... | 5.00 | 1.500 |
| 40 | ..... | 10.00 | 3.000 |
| 100 | ..... | 25.00 | 7.500 |
| 10 | .50 | 5.00 | 1.500 |
| 20 | ..... | 10.00 | 3.000 |
| 40 | ..... | 20.00 | 6.000 |
| 100 | ..... | 50.00 | 15.000 |

## ACTIVITIES OF WESTERN RETAILERS.

A. K. Lammers has sold his yard at Fordyce, Neb., to Peter Becker; N. S. Reinders, formerly with Edwards & Bradford, is manager.

The Roger Mills Coöperative Association, with headquarters at Elk City, Okla., is opening a yard at Trail, a point that up to the present time has had no material yard.

The Smith Stewart Lumber Co. has purchased the store and yard of Edwards & Bradford, at Belden, Neb. M. F. Smith was manager for Edwards & Bradford at this point for seven years, while F. M. Stewart occupied a similar position at Boone, Neb., for four years.

J. W. Southernayd, formerly with Dickason-Goodman Lumber Co., at Morse, Okla., succeeds W. S. Allen as manager of the Western Lumber Co., at Erick, Okla.

E. V. Hottom, until recently with William Cameron Co., at Childress, Tex., succeeds A. W. May as manager of the Cicero Smith Lumber Co., at Tipton, Okla.

W. H. Myer, of Sedgwick, Kan., has accepted a position as manager of Comleys Lumber Co.'s yard at Garden Plains, Kan., succeeding W. P. Lawrence, who has resigned.

F. E. Yale, formerly with the Clark & Bates Lumber Co., at Dewey, Okla., is now manager for the Antrim Lumber Co., at Krebs, Okla.

The Chicago Lumber Co. is rebuilding their sheds at St. Edwards, Neb. A. P. Peterson is manager.

Mike Fry succeeds M. G. Jones as manager of Southwestern Lumber Co., at Loveland, Okla.

Charles M. Robinson, formerly with Superior Lumber Co., and more recently running a yard of his own at Pawnee, Okla., succeeds I. N. Wellman as manager of the Rounds & Porter yard at Granite, Okla.

The Kingan Lumber Co., Burlingame, Kan., has sold out to the Forest Lumber Co. Fred Warzel, formerly of Joplin, Mo., is in charge.

Hugo Stromberg, formerly with the Madill Grain & Elevator Co., Madill, Okla., has charge of a new yard in Paris, Tex.

William Barnett, formerly with the Bennington Lumber Co., Bennington, Okla., is installing a new yard at Durant, Okla.

The Citizens Lumber & Supply Co., with yards in Nebraska and Colorado, has added the Leininger yard at Gordon, Neb., to its line. H. A. Fellars, of the company at Carleton, Neb., superintended the installation of the new yard. H. M. Rhodes is manager.

Dunn Harvey Lumber Co. is opening a new yard at Gering, Neb. The new company looks forward to a big business. Mr. Dunn is an old lumberman of Lincoln.

The lumber business of King-Lawrence Lumber Co., at Mount Hope, Kan., has been purchased by H. N. Renfrew & Co., of that city.

P. E. Brady, Leon, Ia., has just completed construction of and moved into one of the finest and best laid out yards in the state.

S. W. May has resigned as manager of the Cicero Smith yard, at Tipton, Okla., to accept the management of the J. R. Neece yard, Corsicana, Tex.

J. C. Briggs, formerly manager of the Burgner-Bowman Lumber Co.'s yard at Emporia, Kan., has been promoted to the position of traveling auditor. L. L. Wherry, formerly manager of the Burgner-Bowman yard at Caney, Kan., has been transferred to Emporia, to fill the vacancy caused by the promotion of Mr. Briggs, and Mr. Wherry's place at Caney has been taken by W. M. Harlan, of Sheldon, Mo.

W. L. Bailey, formerly manager for Caldwell Lumber Co., Caldwell, Kan., has discontinued there to accept a position as manager of the Houston Doughty yard at Knowles, Okla.

C. H. McKinney, of Siloam Springs, Ark., is now assistant manager at the Burgner-Bowman yard at that place.

N. B. Robinson, formerly treasurer of LeFlore

County Oklahoma, is at this time managing the Bell-McKenna Lumber Co., at Poteau.

The Anawalt Campbell Lumber Co., Dodge City, Kan., C. T. Benbow, manager, is making extensive improvements to its yard and buildings. New sheds and a store building are being erected and when completed, will make this establishment one of the finest and most modern in Kansas.

The Union Lumber Co. succeeds the Home Lumber & Hardware Co., of Randolph, Kan., L. Johntzmeyer retains the management.

The name of the Wright Lumber Co., Falls City, Neb., has been changed to Independent Lumber Co. C. H. Winkler is manager.

C. R. Lowry, Spiro, Okla., has taken his name off the front door of his establishment and changed it to The Spiro Grain & Lumber Co. O. Huff is managing the yard.

The Hammond Lumber Co., Manhattan, Kan., has just put in a yard at Nulford, Kan. George Hammond's son, Earl, will be in charge of the new establishment.

W. S. Cooper, formerly manager S. M. Cooper Lumber Co., Parsons, Kan., has accepted the position of manager of Houston Lumber Co.'s yard at Eureka, Kan., succeeding Edward Crans. Crans is still with the Houston Co. and will be transferred to another point.

The Wells Lumber Co. succeeds Oglesby Bros. at Monticello, Ark.

George Arnold, manager for William Wieters, at Harbine, Neb., is building a new shed, 100 feet long. This parallels another of the same length and will be connected by a roof over the driveway, thus putting the whole yard under cover.

J. H. Heister, formerly manager for Odell Lumber Co., Odell, Neb., is now in charge of the yard of M. Kehee, Blue Springs, Neb.

O. E. Newell, formerly with Nye-Schneider Fowler, at Exeter, Neb., has assumed the management of the yard of Odell Lumber Co., Odell, Neb.

C. D. Everhart & Co. have just completed arrangements to enter the material business at Clay Center, Kan. They have another yard at Nickerson.

H. M. Snape, formerly with the J. G. Wilson Lumber Co., at Coldwater, Kan., has been transferred to Mulhall, Okla.

J. S. Condit, assistant general manager of T. M. Beal Lumber Co., headquarters at Wichita, Kan., is confined to his home on account of serious illness.

The Al. Scott Lumber Co. has succeeded the Malone-Arnup Co. at DuBois, Ala. J. R. Montgomery, formerly at Frankfort, Kan., is in charge of the yard.

H. G. Bredemeier has purchased the property of the State Line Lumber Co., at Mayberry, Neb., and is remodeling the plant.

E. J. Spirk, Wilber, Neb., state senator, has just completed a big new shed.

Delt Greenelsh, formerly with the Dalby interests in southern Iowa, has taken charge of the Miner & Frees yard at Mound City, Mo. This yard, until recently the Johnson, Terry Lumber Co., makes the twelfth point in the Miner & Frees line.

The Keystone Lumber Co., Ashton, Neb., has sold out to The Ashton Lumber Co., Albert Anderstorm and Isaac Sandberg, owners.

The Rand Lumber Co., Lyndon, Kan., has bought out Wilson & Niehart of that point and will conduct both yards.

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Woodville Lime & Cement Co., Toledo, Ohio, has increased its capital stock from $200,000 to $300,000.

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The Alpine Construction Co., Newark, N. J.; capital, $2,000; to deal in building material; incorporators: Abraham Koeppel, Mark S. Feiler and A. Haas.

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Menoue Engineering Corp., New York City, N. Y.; to deal in sand, gravel, etc.; capital, $15,000; A. E. Skidmore and others.

## NEW SUPPLY FIRM FOR GRAND RAPIDS.

After fifteen years of service in which he has risen from the humble position of office boy to that of superintendent of a great railroad system, in which he has seen a little suburban line grow into a system forming a net work over Michigan, Charles A. Floyd has resigned as superintendent of the northwestern division of the Michigan railway for the purpose of devoting his entire time to the business of the Construction Supply Co., which has recently been organized at Grand Rapids, Mich., and of which he is president.

The new company is affiliated with the Century Fuel Co., also of Grand Rapids, of which Mr. Floyd is likewise president.

The new concern will have offices on the ground floor of the Hotel Pantlind building and will become distributors of all kinds of construction materials in the middle west. It will handle a full line of building materials, cement, steel, iron, tile, brick, etc., and will deal in materials for the construction of buildings, roads, bridges, streets and highways. The

CHARLES A. FLOYD, PRESIDENT, CONSTRUCTION SUPPLY CO., GRAND DAPIDS, MICH.

company will also represent the Trus-Con Laboratories of Detroit in the Grand Rapids field.

Mr. Floyd is leaving the railroad business because he desires to engage in business for himself and believes he has a most excellent opportunity. If he meets with the same degree of success in the building material field as has been his lot in railroading, he is bound to become a prominent factor in this industry.

## BUILDING OPERATIONS GAIN IN APRIL.

Newspaper reports concerning building operations throughout the country have been very optimistic in recent weeks. That this popular impression is well founded is shown by the statistics for the month of April. The official reports of building permits issued in 104 principal cities of the United States for last month, as received by The American Contractor, Chicago, total $89,812,962, as compared with $77,056,478 for April, 1915, an increase of $12,756,484, or sixteen per cent. This generous expansion of construction work is well distributed, for of the 104 cities reporting, seventy-one show gains over April, last year, and only thirty-three show losses. And an analysis of the figures indicates that the losses themselves are not so bad as they seem. The showing for Bridgeport, Conn., may be taken as an example. Its permits for the month total only $646,437, as compared with $1,493,413 for April, 1915, a loss of fifty-seven per cent. This looks unfavorable on the surface. But the permits for April, 1914, totaled only $210,905, which may be regarded as normal. Present operations are therefore over 200 per cent better than normal for that city.

It was in April, last year, that the first favorable report of building operations in nine months was made. During the earlier months of the European war there had been a serious slump in building operations. But in April last year the comparative statement showed a loss of only one per cent. The statement for April this year therefore shows a gain of practically fifteen per cent over normal.

It will be noted in the subjoined details that while in cost there is a decided gain, the actual number of new buildings decreased from 29,385 to 21,081, showing that the type of buildings under construction is better and larger than a year ago. Advance in cost of material and labor may account for a part but not all of the gain. By cities the building returns are as follows:

| Cities. | April, 1916 — No. of buildings. | April, 1916 — Estimated cost. | April, 1915 — No. of buildings. | April, 1915 — Estimated cost. | Per cent — Gain. | Per cent — Loss. |
|---|---|---|---|---|---|---|
| Albany, N. Y. | 242 | $ 432,455 | 268 | $ 285,743 | 51 | .. |
| Allentown | 79 | 170,720 | 55 | 146,295 | 152 | .. |
| Altoona | 125 | 140,572 | 174 | 113,570 | 24 | .. |
| Atlanta | 215 | 573,647 | 240 | 446,227 | 28 | .. |
| Baltimore | 601 | 767,275 | 248 | 388,213 | 97 | .. |
| Bayonne | 48 | 66,465 | 14 | 54,680 | 21 | .. |
| Binghamton | 264 | 193,850 | 214 | 180,325 | 7 | .. |
| Birmingham | 404 | 171,509 | 280 | 169,701 | 1 | .. |
| Boston | 471 | 6,837,000 | 353 | 5,257,000 | 30 | .. |
| Bridgeport | 213 | 646,437 | 107 | 1,493,413 | .. | 57 |
| Brockton | 87 | 108,110 | 69 | 80,893 | 34 | .. |
| Buffalo | 453 | 903,000 | 543 | 1,150,000 | .. | 22 |
| Canton | 218 | 451,455 | 99 | 218,520 | 106 | .. |
| Cedar Rapids | 91 | 205,000 | 75 | 251,000 | .. | 18 |
| Chattanooga | 210 | 91,300 | 162 | 44,295 | 106 | .. |
| Chicago | 1,032 | 11,371,606 | 734 | 6,820,700 | 67 | .. |
| Cincinnati | 1,705 | 1,156,165 | 1,655 | 1,317,445 | .. | 12 |
| Cleveland | 1,533 | 2,625,050 | 1,897 | 3,076,235 | .. | 15 |
| Colorado Springs | 27 | 28,173 | 21 | 12,045 | 135 | .. |
| Columbus | 392 | 1,146,840 | 310 | 466,055 | 167 | .. |
| Dallas | 142 | 186,701 | 111 | 492,175 | .. | 62 |
| Davenport | .. | 85,320 | .. | 108,022 | .. | 21 |
| Denver | 287 | 340,960 | 289 | 329,500 | 2 | .. |
| Des Moines | 87 | 162,075 | 78 | 225,323 | .. | 28 |
| Detroit | 1,610 | 3,796,560 | 958 | 4,268,460 | .. | 11 |
| Duluth | 224 | 612,348 | 234 | 340,178 | 80 | .. |
| East Orange | 74 | 213,142 | 62 | 132,501 | 62 | .. |
| East St. Louis, Ill. | 45 | 93,565 | 50 | 278,260 | .. | 75 |
| Elizabeth | 44 | 63,245 | 46 | 111,825 | .. | 43 |
| Erie | 200 | 252,440 | 204 | 213,393 | 32 | .. |
| Evansville | 202 | 140,851 | 139 | 70,198 | 101 | .. |
| Ft. Wayne | 138 | 349,236 | 106 | 298,529 | 42 | .. |
| Grand Rapids | 287 | 485,097 | 251 | 298,394 | 62 | .. |
| Harrisburg | 49 | 371,645 | 45 | 93,375 | 291 | .. |
| Hartford | 201 | 1,091,511 | 157 | 584,600 | 86 | .. |
| Haverhill | 46 | 134,100 | 55 | 112,050 | 26 | .. |
| Hoboken | 32 | 63,860 | 24 | 79,750 | .. | 20 |
| Holyoke | 72 | 186,860 | 25 | 21,600 | 763 | .. |
| Huntington | 99 | 162,225 | 64 | 60,210 | 171 | .. |
| Indianapolis | 764 | 861,674 | 701 | 776,211 | 11 | .. |
| Jacksonville | 64 | 58,485 | 55 | 416,325 | .. | 73 |
| Kansas City, Kans. | 59 | 105,864 | 99 | 147,560 | .. | 28 |
| Kansas City, Mo. | 1,219 | 1,219,949 | 488 | 1,139,170 | 6 | .. |
| Lawrence, Mass. | 34 | 271,220 | 36 | 93,325 | 175 | .. |
| Lincoln | 58 | 425,280 | 68 | 195,920 | 117 | .. |
| Los Angeles | 726 | 1,304,497 | 721 | 1,581,399 | .. | 16 |
| Louisville | 291 | 298,890 | 264 | 282,360 | 6 | .. |
| Manchester | 145 | 124,027 | 171 | 909,320 | .. | 86 |
| Memphis | 222 | 283,545 | 222 | 433,355 | .. | 35 |
| Milwaukee | 624 | 823,271 | 602 | 1,115,750 | .. | 26 |
| Minneapolis | 952 | 3,035,695 | 949 | 1,961,235 | 55 | .. |
| Montgomery | 113 | 46,100 | 48 | 54,015 | .. | 15 |
| Nashville | 404 | 542,445 | 267 | 79,078 | 674 | .. |
| Newark | 250 | 542,617 | 250 | 549,846 | 53 | .. |
| New Bedford | 119 | 779,665 | 144 | 424,020 | 79 | .. |
| New Haven | 136 | 406,620 | 168 | 465,220 | .. | 12 |
| New Orleans | 102 | 242,061 | 142 | 339,571 | .. | 29 |
| New York City | 2,299 | 17,254,315 | 3,212 | 18,070,817 | .. | 5 |
| Boro. of Manhattan | 386 | 8,598,760 | 411 | 6,926,667 | 24 | .. |
| Borough of Bronx | 302 | 1,923,473 | 432 | 2,052,143 | .. | 37 |
| Borough of Brooklyn | 1,218 | 3,952,242 | 1,289 | 5,290,515 | .. | 25 |
| Borough of Queens | 1,064 | 2,387,568 | 916 | 2,412,995 | .. | 1 |
| Borough of Richmond | 149 | 270,971 | 174 | 388,797 | .. | 30 |
| Norfolk | 89 | 226,284 | 65 | 161,218 | 39 | .. |
| Oakland | 353 | 706,479 | 254 | 530,392 | 33 | .. |
| Oklahoma | 70 | 195,685 | 33 | 46,985 | 31 | .. |
| Omaha | 166 | 406,825 | 157 | 389,420 | 4 | .. |
| Pasadena | 124 | 189,813 | 122 | 98,852 | 90 | .. |
| Passaic | 39 | 111,675 | 29 | 51,099 | 28 | .. |
| Paterson | 125 | 252,309 | 127 | 124,510 | 103 | .. |
| Peoria | 55 | 103,749 | 60 | 217,305 | .. | 67 |
| Philadelphia | 1,916 | 6,277,780 | 1,836 | 3,468,900 | 80 | .. |
| Pittsburgh | 452 | 1,256,765 | 463 | 979,250 | 28 | .. |
| Pueblo | 25 | 23,671 | 16 | 19,875 | 19 | .. |
| Quincy, Mass. | 129 | 223,260 | 110 | 154,775 | 44 | .. |
| Reading | 131 | 255,150 | 55 | 111,575 | 129 | .. |
| Richmond | 177 | 595,605 | 148 | 370,114 | 61 | .. |
| Rochester | 410 | 1,168,794 | 420 | 1,159,351 | 1 | .. |
| Saginaw | 33 | 29,705 | 54 | 69,316 | .. | 49 |
| Salt Lake City | 133 | 269,745 | 150 | 262,852 | 3 | .. |
| San Antonio | 142 | 124,928 | 147 | 131,965 | .. | 53 |
| San Diego | 151 | 208,454 | 123 | 95,250 | 119 | .. |
| San Francisco | 629 | 2,247,181 | 854 | 1,669,080 | 35 | .. |
| San Jose | 45 | 86,251 | 40 | 102,977 | .. | 16 |
| Savannah | 56 | 102,575 | 60 | 200,705 | .. | 51 |
| Schenectady | 174 | 213,561 | 100 | 101,748 | 110 | .. |
| Scranton | 75 | 110,573 | 99 | 115,052 | .. | 61 |
| Seattle | 814 | 1,564,510 | 822 | 637,105 | 145 | .. |
| Sioux City | 76 | 214,250 | 72 | 201,670 | 6 | .. |
| Spokane | 174 | 69,154 | 119 | 178,078 | .. | 61 |
| Springfield, Ill. | 104 | 215,425 | 55 | 115,115 | 87 | .. |
| Springfield, Mass. | 216 | 463,785 | 187 | 385,475 | 27 | .. |
| St. Joseph, Mo. | 79 | 260,515 | 198 | 130,000 | 100 | .. |
| St. Louis | 754 | 1,003,146 | 901 | 980,719 | 3 | .. |
| St. Paul, Minn. | 253 | 356,504 | 329 | 529,314 | 32 | .. |
| Stockton | 56 | 77,750 | 51 | 39,662 | 96 | .. |
| Superior | 64 | 131,180 | 132 | 95,480 | 37 | .. |
| Syracuse | .. | 1,063,837 | .. | 1,172,105 | 121 | .. |
| Tacoma | 135 | 185,110 | 107 | 47,889 | 286 | .. |
| Tampa | 98 | 132,130 | 129 | 106,605 | 27 | .. |
| Toledo | 611 | 1,188,467 | 392 | 959,042 | 24 | .. |
| Topeka | 64 | 62,961 | 71 | 105,875 | .. | 43 |
| Trenton | 125 | 327,627 | 102 | 219,000 | 49 | .. |
| Troy | 75 | 54,894 | 84 | 60,745 | .. | 10 |
| Utica | 91 | 132,160 | 36 | 17,995 | 634 | .. |
| Wichita | 57 | 387,310 | 31 | 36,150 | 972 | .. |
| Wilkes-Barre | 107 | 69,905 | 215 | 119,746 | .. | 42 |
| Worcester | 209 | 554,644 | 207 | 564,660 | 2 | .. |
| Youngstown | 172 | 372,901 | 184 | 219,605 | 70 | .. |
| Total | 21,081 | $89,812,962 | 29,385 | $77,056,478 | 16 | .. |

## NEW ORLEANS AS A SEA PORT.

The New Orleans Board of Trade has submitted its thirty-third annual report, covering imports to and exports through the port of New Orleans for the year ending Dec. 31, 1915. The total value of exports and imports is steadily on the increase, as is New Orleans' domestic trade. Pertinent paragraphs in the report show that the arrivals of ocean-going vessels were 2,182, with a gross tonnage of 6,423,648 tons. Imports for the year amounted to $81,969,071; exports, $225,681,547.

# Association News

Important Communications and Notices from Officials of the Various Organizations and Records of Recent Happenings

**James H. Allen, President, National Builders' Supply Association, Lincoln, Neb.**
**Charles M. Kelly, President, New England Builders' Supply Association, Providence, R. I.**
**Frank H. Genung, President, Mason Material Dealers' Association of New Jersey, Newark, N. J.**
**W. O. Holst, President, Ohio Builders' Supply Association, Toledo, O.**
**B. L. Grove, President, Del-Mar-Col Builders' Material Dealers' Association, Washington, D. C.**

## RETAILERS DISCUSS "WHO IS DEALER."

At the meeting of the Fort Wayne district committee of the Indiana division of the National Builders' Supply Association, held at the Wayne hotel, Fort Wayne, on Thursday evening, May 18, a general discussion on the question, "What constitutes a legitimate retailer of building materials," was the principal feature of the evening. For the purpose of having a standard definition of a retailer for that particular district, the officers of the association invited representatives of the sales departments of a number of the cement companies to address the meeting.

Upon calling the session to order, Chairman Theodore C. Schwier announced that there was no specific case referred to nor was there any attempt to stifle competition in the endeavor to locate and clearly define the status of building material dealers. Secretary C. E. Ellenwood addressed the assembly on corporations formed for the purpose of buying materials at wholesale and retailing them to members of their own organization at the same price, thereby practically declaring themselves as solely organized for the purpose of making their purchases at reduced prices.

T. S. Pabst of the Universal Portland Cement Co., stated the attitude of his firm in regard to the sales of cement and their desire to sell it through the regular channel of distribution—the retail dealer.

W. E. Cobean of the Wolverine Portland Cement Co., gave an interesting account of the farmers' granges in the state of Michigan and told of his experience in getting the officers and members to recognize the retail dealers in their communities when purchases of cement were made.

He was followed by L. C. Kelley of the Peerless Portland Cement Co., C. R. Brigham of the Atlas Portland Cement Co., and Marriott Price of the Lehigh Portland Cement Co., all of whom stated that the attitude of their respective companies favored the retail dealer in the distribution of cement.

Among the retailers who took an active part in this discussion were Fred Wehrenberg of the New Haven Lumber and Supply Co., Milo J. Thomas of Corunna, C. W. Addington of the Robert Hixon Lumber Co., John Suelzer, Jr., of the Fort Wayne Builders' Supply Co., E. H. Moellering, of William Moellering's Sons, A. H. Sellemeyer of Kirsch, Sellemeyer & Sons and C. H. Schulz of Jocquel-Schultz Co.

"Cost Finding" and "Closer Coöperation for Mutual Benefit" were topics discussed by G. A. Olsen of ROCK PRODUCTS AND BUILDING MATERIALS, who referred in particular to the endorsement given by President Wilson to the actions of the Federal Trade Commission and the statements made by Edward N. Hurley, vice chairman of the commission, who has assured manufacturers and merchants of the country on a number of instances that the government desires to coöperate in every way possible so as to eliminate all waste effort and to improve the financial condition of the various industries of the country.

Secretary L. S. Desmond of the N. B. S. A., reviewed the history of that organization since its formation seventeen years ago and recited the success which Haydon S. Gaines is having in organizing the retailers in the state of Wisconsin into district committees. He also spoke of the future plans of the organization, stating that within the next two months he hopes to have solicitors working in the states of Michigan and Iowa and said that he felt confident the association would add 1,500 new members to its roster this year.

There are approximately forty recognized dealers in the Fort Wayne district, thirty-six of whom are affiliated with the organization. Those in attendance at the meeting were as follows:

Theodore C. Schwier, E. M. Baltes & Co., Fort Wayne, Ind.
C. E. Ellenwood, Fishach-Ellenwood Co., Fort Wayne, Ind.
D. E. Curtiss, Wolverine Portland Cement Co., Coldwater, Mich.
Gus M. Arendes, Acme Cement Plaster Co., St. Louis, Mo.
L. C. Kelley, Peerless Portland Cement Co., Union City, Mich.
H. A. Drinies, A. Wasmath & Sons Co., Roanoke, Ind.
D. Steiner, Huntertown Grain Co., Huntertown, Ind.
L. F. Desmond, National Builders' Supply Association, Chicago.
W. F. Spangler, Spangler & Grouloff Lumber Co., Churubusco, Ind.
C. R. Brigham, Atlas Portland Cement Co., New York City.
W. P. Stewart, Stewart Lumber & Grain Co., Spencerville, Ind.
S. E. Kessler, Columbia City, Ind.
T. S. Pabst, Universal Portland Cement Co., Chicago.
F. A. Olsen, ROCK PRODUCTS AND BUILDING MATERIALS, Chicago.
W. E. Cobean, Wolverine Portland Cement Co., Coldwater, Mich.
Fred Wehrenberg, New Haven Lumber & Supply Co., New Haven, Ind.
William Schuelker, Elastic Plaster & Coal Co., New Haven, Ind.
Milo J. Thomas, Coronna, Ind.
John Suelzer, Jr., Fort Wayne Builders' Supply Co., Fort Wayne, Ind.
C. H. Schulz, Jocquel-Schulz Co., Fort Wayne, Ind.
J. W. Shaw, Universal Portland Cement Co., Chicago.
A. P. Kelly, Tocsin, Ind.
Merriott Price, Lehigh Portland Cement Co., Chicago.
A. H. Sellemeyer, Kirsch, Sellemeyer & Sons, Decatur, Ind.
J. L. Kocher, Decatur Lumber Co., Decatur, Ind.
C. W. Addington, Robert Hixon Lumber Co.
E. H. Moellering, William Moellering's Sons, Fort Wayne, Ind.
Charles Moellering, William Moellering's Sons, Fort Wayne, Ind.
A. W. Garvin, Home Lumber Co., Huntington, Ind.
W. W. Kenouer, John Kenouer Sons, Huntington, Ind.
H. E. Bash, C. E. Bash & Co., Huntington, Ind.
Otto Stucky, Berne Lumber Co., Berne, Ind.

## DEL-MAR-COL B. M. D. ASSOCIATION.

Hagerstown, Md., May 12, 1916.

Fellow Members: The second quarterly meeting of the Del-Mar-Col Builders' Material Dealers' Association will be held at the Continental hotel, Washington, D. C., Thursday, May 25. There will be two sessions, which will be divided by a luncheon at 1 o'clock. The morning session will be called at 11 o'clock and the afternoon session immediately after luncheon.

Notices of this meeting have been issued to both active and associate members who have been urged to work for a good attendance, as matters of importance will be discussed and a very interesting meeting is anticipated.

An invitation is extended to dealers in Del-Mar-Col territory to attend this meeting, as well as to become members of the association. It is the earnest wish of the officers of the association to awaken the interest of all building material dealers in this territory to the work of the association. They are firm in the belief that great good can be accomplished through the hearty co-operation of all dealers.

Past meetings of this association have been exceptionally interesting and beneficial results from the formation of this organization have been realized by every member attending these meetings.

J. GRASON STEFFEY, Secretary-Treas.,
Del-Mar-Col B. M. D. Association.

## SCHEDULED MEETINGS.

**May 23—Wisconsin District Committee No. 1, Beaumont hotel, Green Bay, Wis. 7:00 p. m. F. W. Hurlbut, chairman.**

**May 24—Wisconsin District Committee No. 3, Erving hotel, Fon du Lac, Wis. 7:00 p. m. M. B. Helmer, chairman.**

**May 25—Wisconsin District Committee No. 4, Grand hotel, Sheboygan, Wis. 7:00 p. m. N. J. Nuss, chairman.**

**July 27-29—Ohio Builders' Supply Association, summer convention, Breakers' Hotel, Cedar Point, Ohio.**

## RETAILERS SOLVE CREDIT PROBLEM.

Retailers of South Bend and Mishawaka, Ind., have drawn up a set of resolutions declaring their terms of payment for building materials sold by members of these two cities in the following language:

Whereas, a large number of contractors in South Bend and Mishawaka have become careless in paying their material bills and have become in the habit of allowing their accounts to remain unpaid for ninety days and over, and

Whereas, such a condition works a hardship on the material dealer who is obliged to meet all of his accounts within thirty days,

Therefore, the building material dealers of South Bend and Mishawaka have, in compliance with the by-laws of the National Association, adopted the following rules of credit.

TERMS OF SALE.

All accounts become due and payable on the first day of the month following purchase.

Two per cent discount will be allowed to contractors for payment on or before the tenth of the month following purchase.

All accounts become delinquent sixty days after due.

Example: Material delivered during the month of January becomes due and payable on the first day of February, and becomes delinquent if not paid in full before the first day of April.

All of the builders' supply dealers are members of District Committee No. Three of the Indiana division of the National Builders' Supply Association. Notices were sent to the contracting and building interests of the cities under the name of the association. In addition to the terms of sale, a list of the members is printed, together with a statement that "prompt payment is the basis of credit."

This new arrangement of extending credits has been in effect but a short time, but already splendid results have been accomplished for the retailers. At least sixty-five regular purchasers of material, to whom long terms of credit have been extended in the past, have been placed on the cash list and, in a number of instances, men who were in the habit of dividing their orders whenever one firm was compelled to request payment, have paid their accounts to date and are now complying with the terms of credit as laid down by the dealers of this district.

The firms which have adopted this credit arrangement and who have benefited by its installation are C. H. Defrees, S. C. Lontz & Sons, Eckler Manufacturing Co., Smogor Lumber Co., Builders' Supply and Specialty Co., Staples-Hildebrand Co., of South Bend, and Herzog & Anderson, Lowe Brothers Lumber Co., and Frank Lumber Co., of Mishawaka.

The Northwest Missouri Lumber Dealers' Association met at the Robideau Hotel, at St Joseph, Mo., late in April.

The Southwest Missouri Lumber Dealers' Association held a meeting at Branson, Mo., on May 12.

# NEWS of the TRADE

### WARM WEATHER STIMULATES BUILDING.

Warm weather during the past two weeks has stimulated activities in building and, as a result, building material manufacturers and retailers have been compelled to put all of their teams and motor trucks to work and to secure the greatest amount of efficiency out of their help, in order that service might be given in the delivery of materials. Throughout the east and in some sections of the central states, where war orders are being filled, construction work runs into factories, warehouses and other large buildings. In the central west building activity is largely confined to apartment and business structures, with the usual number of residence jobs.

In rural sections of the country there is very little building going on at the present time, as the improved weather conditions have given farmers an opportunity to get out and work the soil. Farm work has been delayed this spring, but the hot weather and severe wind storms have aided materially in drying out the land so that plowing is under way and being rushed to the fullest extent. It is necessary that the ground be gotten in condition for planting as soon as possible, as seeding time is here and little, if any, delay can be made in placing the seeds in the ground and starting the 1916 crop on its way.

### CINCINNATI RETAILERS BUSY.

Cincinnati, O., May 18.—Better weather conditions have resulted in considerable improvement in the volume of business handled by material concerns, due to the increased activity in operations by contractors. A slight let-up, caused by some inactivity in the realty market, was reported earlier in the month, but this does not seem to have affected business to any great extent and the report from retailers in the material field is generally that prospects were never brighter for a big season. A significant point is that the building and loan associations have more money than they know what to do with and are said to be seeking loans assiduously and this is bound to help out the situation.

The Marsh-Murdock Co. is the name of a new concern in the building material field in Cincinnati, although it was formed by the consolidation of two older companies, the Murdock Coal Co. and the Contractors' & Builders' Supply Co. The company handles a full line of building materials, excepting face-brick, and is considering taking on some well-selected agencies in that line as well. It is also negotiating for hollow-tile representation. Carlisle Murdoch is president of the company, George J. March vice president and treasurer and James P. Marsh secretary.

James G. Chrispin, president of the James G. Chrispin Lime & Cement Co., which handles a wide variety of building and construction materials, reports that the season's business so far has been excellent, with every prospect of continuing to increase as the summer advances. Mr. Chrispin also states that some new blood may be taken into the company later on, the exact details of the new arrangement being reserved, however, for future announcement. It will be along the lines of expansion to enable the company to take care of its increasing business, but without any change in the lines handled or in the ownership or management of the company.

Business with the Pursell-Grand Co. has been the best ever handled in the company's history for any similar period, according to E. F. Grand. The company has received a good share of the fine run of small business which is going around, and is also landing some nice jobs of the larger sort, including, recently, brick for the Masonic temple at Ironton, O., for which 40,000 Hay Walker brick will be furnished; 65,000 Stark brick for the addition to the L. B. Harrison Hotel, in Cincinnati, and face brick for the new Pleasant Ridge bank.

### MILWAUKEE BUILDING BRISK.

Milwaukee, Wis., May 20.—Building permits for the first four months of 1916, representing investments in amount of $4,753,548 for 1,056 permits issued, showing a gain of 100 per cent over the same period a year ago, indicate the healthy condition of business among the local building supply houses. While there were 1,223 permits issued during the period a year ago, the amount represented was only $2,726,207. The building record for April this year was $1,129,962 for 534 permits issued, which is about the same as for the same month last year.

Plans are now completed for an addition to the reinforced concrete grand stand which is being erected at the State Fair park, West Allis, by the state department of agriculture at a cost of $75,000. The interior of the stand will be provided with hollow tile partitions, making fine exhibit halls.

The Wisconsin Face Brick Co. is handling a nice volume of work both in Milwaukee and around the state. One of its recent contracts was for the face brick on a large motion picture house at Kiel, Wis.

Reinforced concrete, brick and hollow tile construction is strongly favored in construction work in this section, as is shown by specifications of a large number of new buildings of all sizes. The new theater and hotel of the Fred Miller Brewing Co. at Third street, near Grand avenue, to cost $250,000, will be nine stories of this type of construction. A similar type will be erected for the Stratford Arms Hotel Co. at Grand avenue and Fourteenth street, at a cost of $100,000. Numerous apartment houses are being erected or planned in Milwaukee which will embrace the same style of construction and cost in the vicinity of $100,000.

### STRIKERS RETURN TO WORK.

Youngstown, O., May 16.—Most of the men who struck have returned to the plant of the General Fireproofing Co., the plant having been opened on this date after the shutdown due to the strike. The company announces that on account of the large extent to which operations in some departments have been curtailed or abandoned, it is becoming increasingly difficult to place the returning strikers, about twenty-five to forty per cent of the old employes being affected by these changes.

### BUILDING CODE FOR KANSAS CITY.

Kansas City, May 17.—The Builders' Association of Kansas City will take an active part in the framing of the new building code for Kansas City—and E. L. Winn, a member of the city council, vice president of the association, is already getting things started towards such a code. An ordinance has been introduced in the council appropriating $5,000 towards work on the code and various civic bodies getting its bids ready for the large jobs of county road work soon to be awarded.

are being stimulated to urge its preparation from their different standpoints of interest.

No large contracts are pending in Kansas City, but several are "in the offing," including the large work that will result from the selling of several million dollars of bonds.

### BOSTON RETAILERS ACTIVE.

Boston, Mass., May 18.—For the first half of May building permits taken out in the Boston metropolitan district have amounted to $3,343,000, represented in 300 projects, according to the F. W. Dodge Co. The building trade is moving briskly, with a corresponding activity with dealers in materials and mason's supplies. Labor shortage is felt in the unskilled section to some extent but on the whole the contractors are making all the headway they can out of a season that is favored at present with good weather and numerous other favorable conditions.

The Geiger interests have large operations under way in the Back Bay district for automobile concerns. General building in home districts is showing more prominence than for some little time past.

The government dry dock operation is progressing at a good rate, although it has not arrived at the point for the delivery of bulk materials. There is a great amount of blasting being done now on the operation, a very favorable and substantial base having been uncovered for the big structure in which the government is to put several million dollars. The government also has some operations started and others in view in the fortifications of the outer harbor.

### PITTSBURGH BUILDING CONDITIONS.

Pittsburgh, Pa., May 19.—Retail trade has improved considerably the last two weeks. The trend of summer business is gradually being seen. It is evident that building operations will not be what they were hoped to be. This is especially true of house building in the immediate Pittsburgh district. All dealers report that the situation in this respect is discouraging. On the other hand, in outside towns, orders are coming in much better and it is believed that a pretty strong building movement will develop now that the danger of further labor disturbances in the building trades is over.

Yards in these places are increasing their stocks. In general construction work there has been quite a gain in the past two weeks. Many big manufacturing plants are being built or enlarged and this is making a likely market for cement especially. Road and street work has not started much. Bids for big jobs of state and county work are just being announced this week and no contracts of importance have been awarded in this district. Bridge building promises to be on a very good scale this summer. Prices on practically all stocks of builders' supplies are on the rise and collections are said to be very satisfactory as a rule.

Houston Brothers Co. is having a busy summer at all its plants in this city and reports prices on the rise. Its trade in carload lots is increasing.

The D. J. Kennedy Co., at its city plants, is getting into the rush of a good summer's business, although in some lines the trade has not been up to expectations as yet. Its brick business is going to be a big feature of its totals this year.

J. M. McGuire & Co. have moved their offices from the Commonwealth building to the Westinghouse building. This concern has been very busy of late in

## PACIFIC COAST BUILDING.

San Francisco, May 13.—The building activity in San Francisco, which began in February and which reached a high figure in March, has continued up to the present time and promises to make the year one of the best in the history of the city. The total valuation of building permits issued in April was two and a quarter million, about a quarter of a million less than for the month preceding, but nearly half a million more than for the month of April in either 1915 or 1914. For the present year, the valuation of permits issued in the first four months was $7,064,000, while for the same months last year, notwithstanding the Exposition, the total was only $5,383,000, showing a gain of nearly thirty-three per cent for the current year. Of the total valuation of permits for the month of April, about $900,000 was for buildings classed as brick and concrete.

Very nearly the same percentage of gain is shown by other California cities. In Los Angeles the total for the first four months of the year was $5,376,000, a gain of thirty per cent over last year. Oakland shows a gain of thirty-five per cent for the same four months. Some of the smaller cities of the state, such as Sacramento and San Diego, show a slight loss, due to local causes.

Though general business conditions in Portland, Ore., and in Seattle, Wash., are reported excellent, better, in fact, than in most other parts of the coast, the building revival is lagging behind. In Portland, the first four months of the year indicate a loss of about twenty per cent as compared with the same period of last year, while in Seattle there is a slight loss.

## THE SITUATION IN KANSAS CITY.

Kansas City, Mo., May 19.—Manufacturers and retailers disagree slightly as to their estimates of activity in building material lines at the present time. Certain it is that prices are steady and strong. Stuff is moving and demand seems good. From these facts the manufacturer is entitled to believe that conditions are pretty rosy. Retailers on the other hand complain that stuff is not moving as it should. In fact, one line yard operator a short time ago, after remarking that his yards had averaged only about $2,000 gross business each for the first quarter of the year, added that he thought lots of this prosperity talk was manufactured. His yards were scattered over a large representative territory and he believed if there were any activity he ought to tap it.

The explanation probably lies in the fact that dealers have been loading up pretty heavily on the materials so that stocks are pretty large. This condition was reflected somewhat in the lumber market which a short time ago turned a little soft. Coupled with the movement of manufacturers' stock to retailers activity in the field of large construction and the apparent discrepancy between the statements is reconciled. Already good crop and weather conditions are stimulating retail trade so that the retailer can get a taste of the activity wholesalers are talking about.

The increase in building permits in representative cities of the west shows that there has been great activity. The figures for April, 1916, show an increase of eight per cent in Kansas City over April, 1915; Lincoln, Neb., 117 per cent; Omaha, four per cent; Sioux City, six per cent; Oklahoma City, thirty-one per cent; St. Joe, 100 per cent.

There are plenty of available cars in this district.

## CONDITIONS IN CANADA BRIGHTER.

Toronto, Ont., May 17.—Prospects are brightening in the builders' supply trade in Toronto. Big structures to cost over $7,000,000 are in the building program for the spring and summer in this city. The following is list of prospective buildings, for which permits either have been or will be granted shortly: Union Station, $3,400,000; Customs House, $1,500,000; Robt. Simpson Co. warehouse, $500,000; T. Eaton Co. warehouse, $500,000; Robt. Simpson Co. dormitories, $200,000; Princess Theatre, $100,000; T. Eaton Co., four-story stable, $100,000; T. Eaton Mail Order Building, $1,000,000; Majestic Theatre (changes), $50,000.

Contractors are quietly buying up vacant lots and supply men are putting in stocks. They feel that the good conditions which exist in Detroit, Cleveland and Buffalo will soon travel northward. At some industrial points in Ontario there is a demand for workmen's homes.

At Quebec this season at least 10,000,000 brick will be required. At Sherbrooke and many eastern points quite a normal business is being done. For the month of April this year the number of building permits issued in the city of Montreal is 220, representing a value of $428,530 as compared with 312 in April, 1915, representing a value of $973,891. There were 438 permits issued up to April 30 this year, value $911,950, while for the same period last year there were 666, value $1,865,827.

## MEMPHIS MARKET STEADY.

Memphis, Tenn., May 18.—The material firms of the city are having a more active trade this month than in April. Prices are firm with a tendency toward advances. The car situation is much improved at Memphis but apprehension is felt as to a shortage late in the summer. The amount of small construction work, together with city work is about up to the average and some large structures are under indefinite plan, for mid-summer building. Heavy rains prevailed the first few days in May. The lime and sand trades are more active with tendencies toward additional strength in the former. Cement, roofing materials, plaster, sewer pipe and clay products are all moving in better volume than a month or sixty days ago. Much of the residence work under way in Memphis is of the bungalow and stucco type with a few handsome and palatial homes in the east side park section.

It is stated that the last span of the Harahan bridge across the Mississippi river will be completed by June 14, and preliminary use of the bridge will doubtless be in July, though the structure will not be open for freight and passenger traffic before August 1.

The numerous highway projects south of here and the action favorable to road construction in several counties is precipitating a good activity in gravel. Most of the pits are in operation in this section and a number of new companies along that line are being launched.

With the construction of the Mill street concrete culvert Memphis will mark the finish of the wood and steel bridges within the corporate limits. Work on this structure, which is to cost $11,807, was commenced a few days ago. Concrete arches have replaced all the wood and steel bridges in the city.

Farm drainage, school and government construction lines constitute other items of activity in this section.

## WILMINGTON RETAILERS CASH IN ON WAR BUSINESS.

Wilmington, Del., May 17.—Dealers in building materials and builders, contractors and estimators in the vicinity of Wilmington report business as being of a most satisfactory volume during the past few months and declare that there is every indication that a record breaking business will be accomplished during the summer months. Many manufacturing plants in Wilmington are working day and night on war orders and the proximity of the Du Pont powder works has lent an extra incentive to business with the result that practically every commercial and industrial concern in the city is operating to capacity. The result has been a natural demand for additional floor space and plans are being prepared for alterations to the various factory buildings amounting to close to $3,000,000.

## RESALE PRICE LEGISLATION FAVORED.

Washington, May 18.—By more than a two-thirds majority, Chambers of Commerce in various parts of the United States have voted in favor of legislation permitting the maintenance of resale prices, according to the results of a referendum made public by the Chamber of Comemrce of the United States today.

Aside from its bearing on legislation of this check, the referendum, which is supposed to represent a proportion of the judgment of merchants and manufacturers in the United States, is of peculiar interest because of the recent rejection of George F. Rublee by the senate as a member of the Federal Trade Commission.

Although Senator Gallinger's personal objection to Rublee was the controlling factor in the action of the senate, several senators who might not have come to Gallinger's support were induced to do so because Rublee is an advocate of the Stevens price-maintenance bill. The result of the referendum, in which 353 commercial organizations participated, has raised a question whether some of Rublee's economic views are not precisely in accord with the dominant view in the business world, to which the Federal Trade Commission is intimately related.

## OUTLOOK CONSIDERED GOOD.

Louisville, Ky., May 18.—Louisville building permits are showing a steady increase and in addition to the small work there are several new contracts coming out for buildings of fifty or a hundred thousand dollars or more. Street and road work is being handled on a larger scale and the architects' offices are fairly well filled up with work of one kind or another, including a number of fine residences.

Among the principal buildings that have the interest of the supply man, contractor, machinery handler, etc., at this time are the new $100,000 grain elevator to be erected by the Detroit firm of Janse Bros., Boomer, Crain & Howe, for W. A. Thomson & Co., Louisville; the new Auditorium Building, which is being held up until the stockholders can get together on a site, the new building of the german-American Bank & Trust Co., New Albany, Ind., and the new building to be erected by the Speed Realty Co.

There is a fair demand for fancy face brick, lime, cement, sand, gravel, wall plaster and most everything else handled by the supply houses, and the general outlook is considered exceptionally good.

H. H. Snyder, formerly at the head of the old H. H. Snyder Co., M. B. Snyder and E. M. Power recently incorporated the Copper Construction Co., of Louisville, with a capital stock of $15,000, divided into 150 shares. The debt limit is $50,000. The new company has landed some nice school contracts out in the state, including the high school at Maysville.

The Louisville Builders' Supply Co. reports that it has landed a cement contract on the new Thompson elevator which will be of steel and concrete construction. Work will be started at once on this building and rushed to completion. The supply house also has a contract to furnish 100,000 brick on the new building of the R. E. Wathen Distillery, and many small scattered contracts including a lot of street work. Since Mr. A. E. Livingston obtained control of the company a number of changes have been made in the force. Huston Fairleigh, formerly connected with the Union Cement & Lime Co., as a salesman, has become connected with the Louisville Builders' Supply Co., and Sam Conner, of the Louisville office of the Monongahela River Consolidated Coal & Coke Co., has also been added to the force. The company has installed a three-ton Republic truck to handle local deliveries.

The Gillespie Co., Louisville, recently purchased from the receiver of the Ohio River Contract Co. the contract to complete lock and dam No. 41 on the Ohio.

# SAY WICCAPEE!

It Has Stood the Test of Time

## New York Rubber Co.

(INC. 1851)

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While Aerial Wire Rope Tramways were originally designed to carry ore over mountainous country, they have steadily been finding favor in industrial fields, for transporting stone, gravel, coal, cement, lumber, etc., and for the disposal of ashes and other waste materials.

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are manufactured in various systems to meet existing conditions. Years of practical experience in designing and manufacturing Tramways, enable us to furnish equipment that will satisfactorily and economically solve practically all transportation problems.

We shall be glad to supply you with full particulars, and to advise, without cost, whether an Aerial Tramway will be practicable for your particular work.

59 Years in Business

**A. Leschen & Sons Rope Co.**

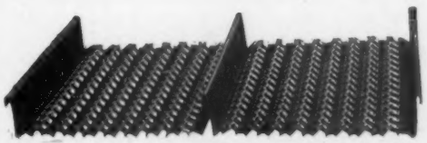
ST. LOUIS, U. S. A.

New York Chicago Denver Salt Lake City San Francisco

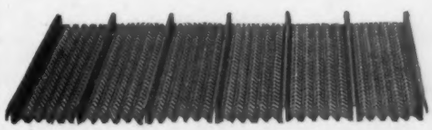


# Bigger Business, More Profits

## The Complete Line of Best Products

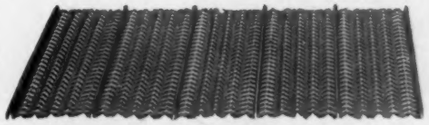


1½-in. Hy-Rib. Very rigid. For heavy loads and wide spans.



15/16-in. Hy-Rib for floors and roofs without forms—sidings, partitions and ceilings without channels.

13/16-in. Hy-Rib. Widely used in partitions, sidings and ceilings.



⅜-in. Hy-Rib Lath used as self-furring lath and in partitions, ceilings, etc., for stud spacings 24 in. to 36 in.

Channels without prongs, ⅜, ½, 1, 1½, 2 inches.

Hy-Rib in four depths from ¾ to 1½ in. Each in various gauges.

Rib Lath, a most economical lath in three types and various gauges.

Diamond Lath in two types and various gauges.

Kahn Pressed Steel Studs include channels from ¾ to 2 in. in size, studs with prongs from 2 to 12 in. and hollow studs in various sizes.

Steel Corner Beads for the protection of plastered corners, in four types. Metal Base Screeds for use between cement base and plaster are supplied in three types.

Inserts for use in concrete slabs, beams or columns, for attaching Fixtures, Shaft Hangers, etc., are furnished in three types.

**Dealers increase sales by handling a line that is known for its high quality and the service back of it.**

KAHN Building Products — TRUSSED CONCRETE STEEL

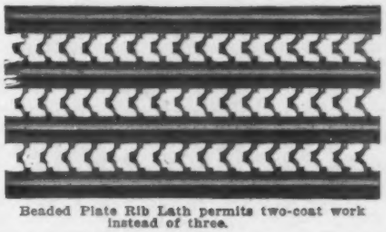
**Trussed Concrete Steel Co.**

**Dept. H 26 Youngstown, O.**

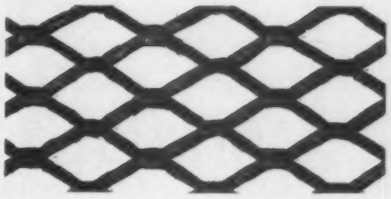
REPRESENTATIVES IN PRINCIPAL CITIES

KAHN Building Products — TRUSSED CONCRETE STEEL

Kahn pressed steel channel studs, 3, 4, 5, 6 inches; also 2 inches without turned flange



Beaded Plate Rib Lath permits two-coat work instead of three.



Diamond lath in two types and various gauges.

# SELLING vs. BUYING!

When **we** are selling you a pulverizer, we make certain statements of efficiency—

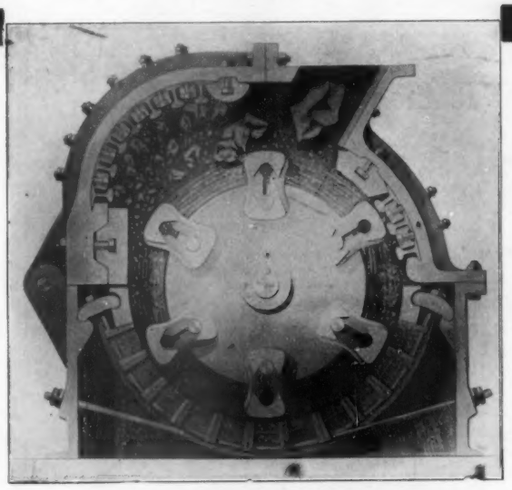
and

When **you** buy the machine, **we GUARANTEE** these statements

## A Guaranteed Pulverizer

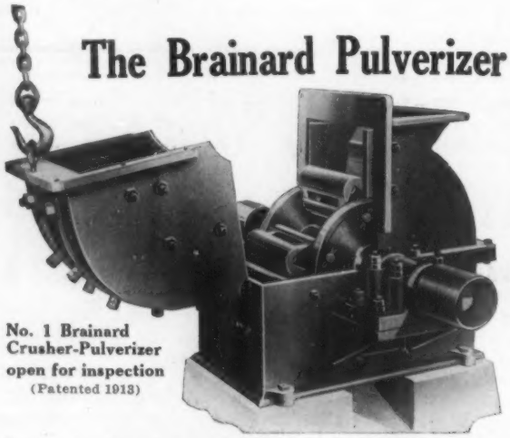
A pulverizer that an owner **knows** when he installs it that it is going to **save him money,** because we will prove it to him before he buys it. We sell our machines on a trial basis **and a guarantee,** and if it does not do what we say it will—it is removed **at our expense.**

Over 100% saving in maintenance guaranteed—by using the **Brainard Crusher-Pulverizer.** We guarantee our Hammers to crush and pulverize four to six times more material than any other make of hammer. Are not only reversible but **doubly reversible,** meaning that where you get one wearing surface in other hammers, you get **four** wearing surfaces in the Brainard. Made extra heavy of best grade Manganese Steel.



No. 3 Brainard Patent Pulverizer

## The Brainard Pulverizer for Any Crusher Plant Design

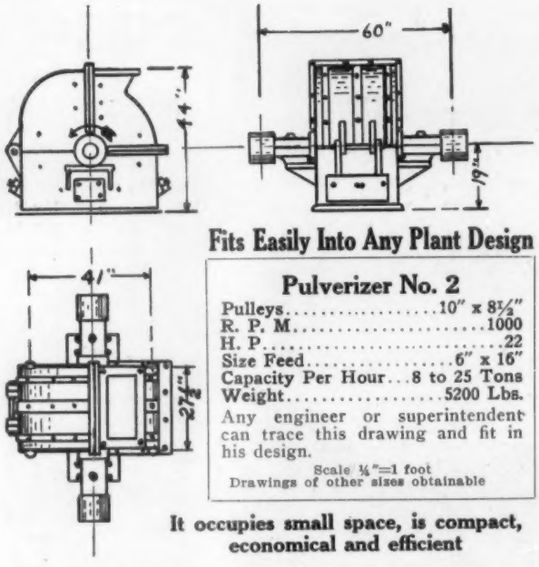


**No. 1 Brainard Crusher-Pulverizer open for inspection**
(Patented 1913)

Screen trouble always experienced with other makes of pulverizers, entirely eliminated by the Brainard method of supporting the screens. This means a great saving in maintenance.

The Brainard is a Crusher as well as Pulverizer and makes a Minimum or Maximum amount of Fines, according to the requirements. Requires 25% less power to operate than any other machine of the same capacity.

The Brainard requires no adjustments in Crushing or Pulverizing, to maintain the size of the finished product, or the capacity. Cheaper and easier to make replacements when necessary than any other machine. Designed so that every working part is easily accessible.




**Fits Easily Into Any Plant Design**

**Pulverizer No. 2**

| | |
|---|---|
| Pulleys | 10" x 8½" |
| R. P. M. | 1000 |
| H. P. | 22 |
| Size Feed | 6" x 16" |
| Capacity Per Hour | 8 to 25 Tons |
| Weight | 5200 Lbs. |

Any engineer or superintendent can trace this drawing and fit in his design.

Scale ¼"=1 foot
Drawings of other sizes obtainable

**It occupies small space, is compact, economical and efficient**

All grates, hammers and wearing blocks are made of the very best quality of manganese steel

***Let us discuss your particular operations with you***

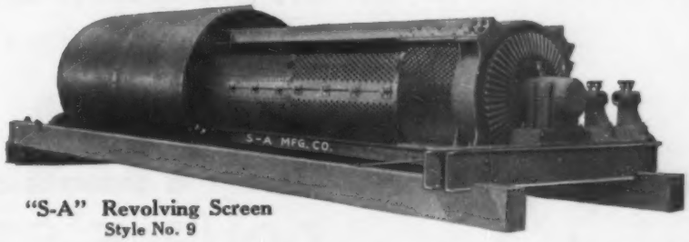
**Also Agents for All Sizes of the Well-Known Universal Jaw Crushers**

# Midland Crusher-Pulverizer Co.

**Offices: Old Colony Bldg., Chicago** **Factory: Milwaukee, Wisconsin**

# Screens for Modern Crushing Plants

The severe service and large capacities required of screening units in the crushing plants of today demand screens of unusual size and of unusually heavy construction. Our standard No. 9 Revolving Screen, built for this service, is one of the largest and heaviest manufactured.




**"S-A" Revolving Screen**
**Style No. 9**

The screen is formed of cast iron ends, securely connected by heavy angle iron bars to which the screen plates are bolted. This construction eliminates the use of spiders or any internal obstructions and gives a free passage through the screen.

At the discharge end, the large driving gear is attached to the supporting ring and may be renewed; at the receiving end the main casting is turned and fitted with a **renewable forged steel tire.** This steel tire will out-wear any chilled casting and the tire and the bevel gear which are subjected to the greatest wear, may be easily removed and renewed without disturbing the large castings.

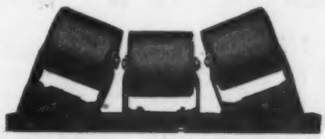
The large bearing supporting the discharge end is cast integral with the countershaft bearings, giving a perfect alignment and adjustment of the screen at all times. This main bearing is extra heavy and is provided with a renewable thrust button of tool steel which receives the end thrust of the screen.

Standard sizes are 42 and 48 ins. diameter and 10 to 24 ft. long.

We shall be glad to specify the proper screen to meet any conditions and to quote accordingly.

**The "S-A" Unit Ball Bearing Belt Conveyor Carrier**

SAVES THE BELT
SAVES ATTENTION
SAVES GREASE
SAVES POWER
SAVES REPAIRS



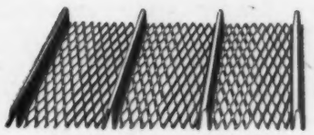
## STEPHENS-ADAMSON MFG. CO.

AURORA, ILLINOIS

NEW YORK PITTSBURGH BOSTON SALT LAKE CITY CHICAGO ST. LOUIS TORONTO LOS ANGELES HUNTINGTON

*We design and manufacture conveying machinery for rock crushing plants, gravel washing plants, storage systems, etc. Also transmission and screening equipment, elevators, gates, feeders, car pullers.*

Trademark GF YOUNGSTOWN, OHIO. Reg. U. S. Pat. Off.

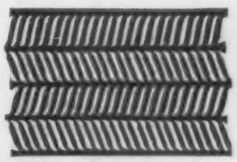


### *Self-Sentering*

for roofs, floors, partitions and walls. A combined form and reinforcement, a lath and stud in one—eliminates the form work from concrete construction.

### *GF Steel-Tile*

for floors and roofs. Removable or permanent forms set on simple lines of shoring instead of forms. Less material, lighter weights, no leakage—good for any load and spans to 30 feet.



### *Herringbone Metal Lath*

The stiffest, most economical metal lath made. Will not sag between 16 to 20 inches stud spacing, goes up with the minimum laps, curls the plaster into a solid key without waste. For walls, ceilings and exteriors.

# A Complete Line of Building Materials and Waterproofings

DEALERS who sell the big GF Line have at their disposal high-grade building products and waterproofings for the greater part of every building operation.

More than that—they have the help of a large organization working with them in every way. Our plan is to help the dealer in his selling.

If you're interested in a GF Dealership, write and we will send you full details covering the complete GF Line, which includes—

Self-Sentering, Steel-Tile, Herringbone and Diamond-Rib Lath, Expanded Metal, Trussit, G-F Cold Drawn Channel Studs and Furring, Corner Bead; Wall Ties and a Complete line of Waterproofings.

## The General Fireproofing Co.

**1522 Logan Avenue, Youngstown, Ohio**

# THE PLIES CAN'T SEPARATE

(THEY'RE DOUBLE STITCHED)

THAT'S ONE REASON WHY

# REXALL

## DOUBLE-STITCHED

# BELTING

WILL BE FOUND IN
THE LARGE UP-TO-DATE
SAND & GRAVEL PLANTS

# IMPERIAL BELTING COMPANY

SALES OFFICES
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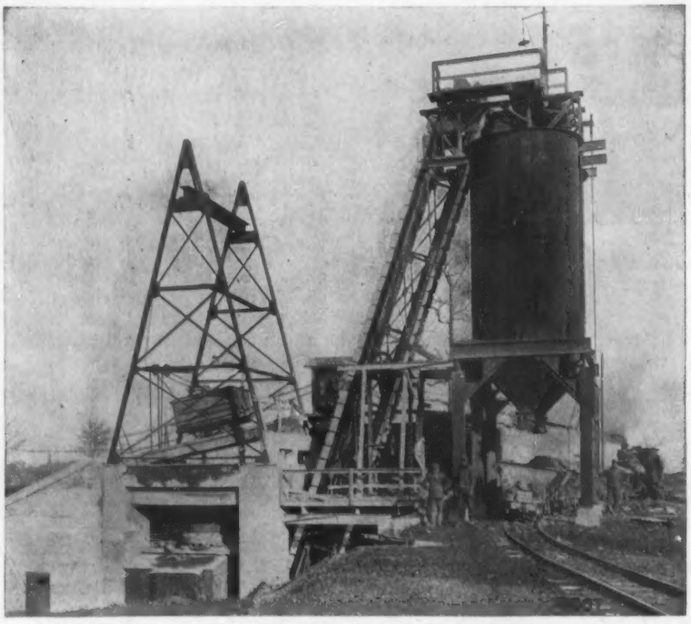
LINCOLN AND KINZIE STREETS
CHICAGO





Continuous Bucket Elevator Delivering Material to Storage Bin.

# Get Continuous Service

from Crusher to Cars, or Cars to Bins, using

# Link-Belt Machinery

Link-Belt conveying and hoisting machinery gives continuous service generously: continuous flow of material; it affords uniform, uninterrupted operation through its reliability. Designed and built to fit the individual conditions and requirements.

**We plan and build your entire conveying equipment**

Whether for a temporary installation on a contract job, or conveying and elevating equipment for permanent service at quarry or pit, there is Link-Belt machinery that will do the work well.

The "know how" to solve your conveying and hoisting problems is found in the Link-Belt engineering organization. We will gladly assist you.

Book 213 shows many installations of Link-Belt Machinery for handling stone, gravel and sand.

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**PHILADELPHIA**

New York .....299 Broadway
Boston .....49 Federal St.
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Detroit .....732 Dime Bank Bldg.

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Wilkes-Barre .....2d Nat'l Bank Bldg.
Seattle .....580 1st Ave., South
Portland, Ore. .....14th and Lovejoy Sts.
Los Angeles .....161 N. Los Angeles St.
Denver .....Lindrooth, Shubart & Co., Boston Block
Minneapolis .....Link-Belt Supply Co.

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New Orleans .....C. O. Hinz, Hibernia Bank Bldg.
Louisville .....Frederick Wehle, Starks Bldg.
Knoxville, Tenn. .....D. T. Blakey, Empire Bldg.
San Francisco .....N. D. Phelps, Sheldon Bldg.
Birmingham .....General Mach'y Co., Brown-Marx Bldg.
Toronto, Canadian Link-Belt Co., Ltd., 1189 King St. W.

# CONCRETE

## St. Paul's Park on Stilts.

Dr. Justus Ohage, of St. Paul, health commissioner, is a believer in preparedness, scientific, industrial and military. Harriet Island, in the Mississippi and the center of the city, where the free municipal baths are located, is under his control.

It is a low wooded island subject to slight overflows in "dry" years and about once in a decade it comes pretty near vanishing when the big river goes on a rampage. The federal government will not permit the city to build dikes around it, so in the high water years it has always been a question whether the park buildings would be there when the waters subsided.

After consulting the weather maps and data last fall Dr. Ohage decided that St. Paul was due for another big flood. It was. And the only reason there are park buildings there now is the health commissioner's preparedness.

This preparedness consisted in putting the principal walks and all the buildings on stilts of concrete. A retaining wall of concrete had already been built on the bath house frontage. The city let a contract for the connecting up of the chief buildings by means of a reinforced concrete walk something over six feet above ground. This cost $6,300.

Some hitch came then and Dr. Ohage could not see how he was to get the buildings on solid foundations before the spring floods. He solved the problem by turning his park crew into concrete workers. Ten of them worked for a month just prior to the last big freeze, and placed 200 reinforced concrete piers of their own design and mold under the buildings. Each of these piers is set on a footing 24 x 24 inches. The piers are 18 inches square at the base and 12 inches at the top. They are 6 feet high. All the work was done by hand without even so much as a regulation concrete mixer. They had to be cast in place under the buildings which were raised on improvised jacks as shown in one of the pictures.

The need of the piers was demonstrated in the spring flood. Water rose to within a few inches of their tops, ice and logs banged against them for weeks. The only damage done was a few muddy marks on the piers. St. Paul now has the distinction of possessing about the only park in the country which might be said to be set on stilts.

## Annual Fire Protection Meeting.

The annual meeting of the National Fire Protection Association was held in Chicago last week. A large number of scientists and fire prevention experts were in attendance. Charles E. Meek, of New York, was re-elected president. Franklin H. Wentworth, of Boston, was re-elected secretary and treasurer.

In the report of the committee on resolutions as adopted by the association the avoidance of the use of wooden shingle roofs and other combustible materials in the exterior of buildings was especially emphasized. The text of the resolutions is as follows:

The National Fire Protection Association, assembled in Chicago for its twentieth annual meeting, calls attention to the disastrous fires of the last few months which destroyed whole sections of cities in the South and elsewhere and which further emphasize the need for better building construction and the avoidance of wooden shingle roofs and other combustible materials in the exterior of buildings.

The association heartily commends the growing movement for city planning as likely to produce better conditions as to building heights and congested areas and provide the open spaces and broad avenues, which, besides their human and esthetic values, are excellent checks to sweeping fires.

In its warfare against the needless sacrifice of human

UNDERPINNING OF STRUCTURES AT HARRIET ISLAND PARK.

lives and property by fire the association advocates the following measures:

1—The adoption by municipalities of the standard building code of the National Board of Fire Underwriters to the end that fire resistive building construction may be encouraged, the use of inflammable roof coverings prohibited, adequate exit facilities from buildings assured, and interiors so designed and fire-stopped as to make easy the extinguishment of fires therein.

2—The adoption by all States of minimum building requirements for the protection of State and county hospitals, asylums and similar institutions outside city limits and of small communities in which the establishment and enforcement of a building code is impracticable.

3—The enactment by each State of the fire marshal law advocated by the Fire Marshals' Association of North America to the end that official investigation may be made of the causes of all fires, preventable fires may be eliminated by public education, and the crime of arson stamped out.

4—The adoption of the association's suggested ordinance providing for the systematic inspection of all buildings by city fire marshals or local firemen to insure the vigorous enforcement of rules for cleanliness, good housekeeping, and the maintenance of safe and unobstructed exits, fire-fighting apparatus and other protective devices.

5—The enactment of ordinances similar to that of Cleveland, Ohio, fixing the cost of extinguishing preventable fires upon citizens disregarding fire prevention orders, and a more general legal recognition of the common law principle of personal liability for damage resulting from fires due to carelessness or neglect.

6—The wider general use of the automatic sprinkler as a fire extinguishing agent and life saver and the more general adoption of the fire division wall as an important life saving exit facility.

7—A careful study of the technical surveys of cities made by the engineer of the committee on fire prevention of the National Board of Fire Underwriters covering the items of water supplies, their adequacy and reliability, fire department efficiency, fire alarm systems and conflagration hazards, and of the possibility of coöperation among neighboring cities through mutual aid and the standardization of hose couplings.

8—The adoption of the association's suggested laws and ordinances for State and municipal regulation of the transportation, storage and use of inflammable liquids and explosives.

9—The universal adoption and use of the safety match and legislation prohibiting smoking in all parts of factories, industrial and mercantile buildings except in such fireproof rooms as may be especially approved for the purpose by fire departments.

10—The education of children and the public generally in careful habits regarding the use of fire.

In the furtherance of these objects we appeal for the coöperation of all citizens. We ask them to help in the dissemination of our valuable literature and in the use of the standards of fire protection, so carefully worked out by our committees to the end that the lives and substance of our people shall not continue to be dissipated by a reckless and easily preventable waste.

As to the wooden shingle, the recent conflagrations at Paris, Tex.; Nashville, Tenn., and Augusta, Ga., again emphasize the extreme hazard of this roof covering and the need for prohibition of its use. Our efforts to limit its use have this year met with active opposition of lumber dealers in the cities of Newton, Mass.; Portland, Me., and Montgomery, Ala., where efforts were made to secure the repeal of ordinances already passed. It is perhaps natural that the economic interest of the lumbermen should warp their judgment as to the hazard of this roof covering and induce certain of them to assume an attitude hostile to the public good. We believe, however, that the lumber industry as a whole is capable of looking at this matter in a large and generous way, and if the present efforts at fire-retardent treatment of wooden shingles should fail of technical or economic success, that they will join with the forces of fire prevention in limiting the uses of wood to those forms in which it is superior and capable of protection from fire. It has long been recognized by us that the installation of the automatic sprinkler will make well constructed wooden interiors reasonably safe and that the abandonment of wooden shingle manufacture will not seriously impair the lumber industry, but will leave to it the field in which the uses of wood do not menace public safety.

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Milwaukee-made concrete mixers will be used in far-off Honolulu for street and highway construction. The Chain Belt Co. of this city has made a shipment of three machines. The type is self-propelling and equipped with a long arm and bucket distributer.

The U. S. Steel-Concrete Tie Co., of Milwaukee, organized about a year ago to manufacture a railroad tie of concrete and steel construction invented by L. W. Ashley, has increased its capital stock from $100,000 to $500,000. The rapid growth of the industry made the increase necessary. E. M. McVicker is president and G. E. G. Kuechle is secretary.

HARRIET ISLAND PARK—WOMEN'S BATH HOUSE.

HARRIET ISLAND PARK—REFECTORY PAVILION.

### COMMITTEE RECOMMENDS CONCRETE.

Milwaukee, Wis., May 5.—That Milwaukee has wasted a large sum of money by not using concrete for street paving was the report made by a special committee of the Milwaukee Real Estate Association, sent out to inspect concrete pavement at Sioux City, Ia. Despite hard wear to which the pavement has been subjected and a range in temperature from thirty-five below to 115 degrees above zero, this type of pavement has stood up excellently.

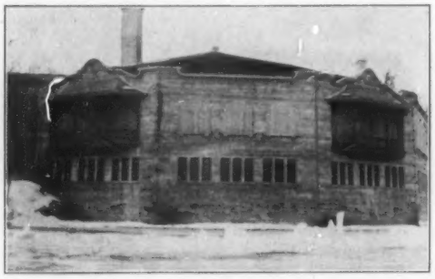
The Milwaukee association has been advocating concrete pavement for streets and especially alleys for some time, and since inspecting the concrete pavements of other cities the members are convinced thoroughly that it is not only economical but wise to use concrete.

Another extravagance was pointed out in the fact that Milwaukee has used brick gutter and sandstone curb in many residence districts where a combination cement curb and gutter would answer the purpose just as well, while the cost would be materially reduced. In alley construction thousands of dollars could also have been saved.

### CONCRETE ROADS FOR MASSACHUSETTS.

Boston, Mass., May 3.—Encouraged by the success of experiments in this state and by reports from the West, Chairman Sohier of the Massachusetts highway commission has decided to build concrete roads in Massachusetts where it is believed they will be most efficient.

There are now in this state about fifteen miles of concrete state highway. Last year out of sixty-



BIGWIN INN, LAKE OF BAYS, ONT.
LAKE OF BAYS, ONT.

three miles of state highway constructed, 5.34 miles were built of this material, and this year the proportions will be even greater.

In pressing for permanent road appropriations the authorities are making appreciable progress in convincing the legislature and the people that the concrete highway presents among numerous advantages the long life of the road and low cost of maintenance.

### SUMMER HOTEL OF CONCRETE.

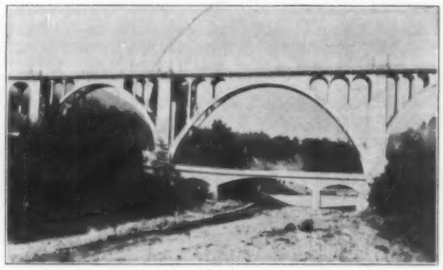
For the purpose of making the various buildings of the summer hotels now in the course of construction by the Bigwin Island Land Co., Ltd., on the island of that name in the Lake of Bays, Ont., entirely fireproof, the various units of the hostelry are being constructed of concrete.

The buildings are set in the midst of natural maple and beech bushes on the island, which in dry seasons of the year are very inflammable.

The south side of the dining room and kitchen face upon the lake, the former having a length of 100 feet, a width of thirty-five feet six inches and a height of twenty-one feet.

In addition to this building there are two blocks of bedrooms, each 485 feet in length and forty-nine feet wide, power house, observation tower and the rotunda or lounge building.

In some instances where the natural stones could be placed with beautifying effect, they were not crushed



UNIQUE CONCRETE BRIDGE IN CALIFORNIA.

but in all other instances crushed stone was used as the aggregate for the concrete, sand for which was secured at a point several miles distant on the lake shore and was brought to the scene of building in scows.

The builders are very much impressed with the diversified use of cement and are contemplating the construction of tennis courts out of this material. The bathing beach will also be improved through the use of cement.

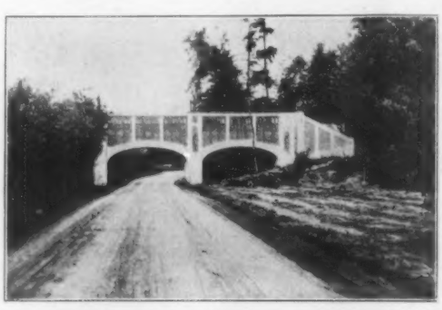
### A BRIDGE WITHIN A BRIDGE.

One of the largest concrete bridges in the west is the semi-circular bridge that has recently been built across the Arroyo Seco in Pasadena, Cal. It is 1,470 feet long and has a maximum elevation of 160 feet. Indeed, the bridge is so high that it is inaccessible to the people living in the valley; so another bridge has been built underneath the large bridge to connect the lower level thoroughfares on opposite sides of the arroyo. This secondary bridge is an integral part of the main structure and rests upon the same foundations; it is directly beneath the higher bridge. It was paid for by the people living in the valley who will make most frequent use of it.

### CONCRETE BRIDGE PRESERVES PARK BEAUTY.

The city of Seattle, Wash., was obliged to have an ugly sewer pipe running through its public park which disfigured the landscape very much. The city engineer was called upon to arrange it in such a way as to make it attractive, if possible. He solved the problem very nicely. The pipe was large—sixty-six inches in diameter—and it had to be carried across a ravine under which was one of the main thoroughfares of the park. So, a very beautiful concrete bridge was constructed after the style of an old Roman aqueduct. The structure is of reinforced concrete, faced with dark red brick. The piers are of solid concrete placed on a hard pan bottom and are about sixteen feet high at the center of the ravine and about fourteen at the abutments. The arches are monolithic, which gives strength to the structure.

The bridge not only hides the ugly sewer pipe but affords a five-and-one-half-foot walk from one part of the park to the other.

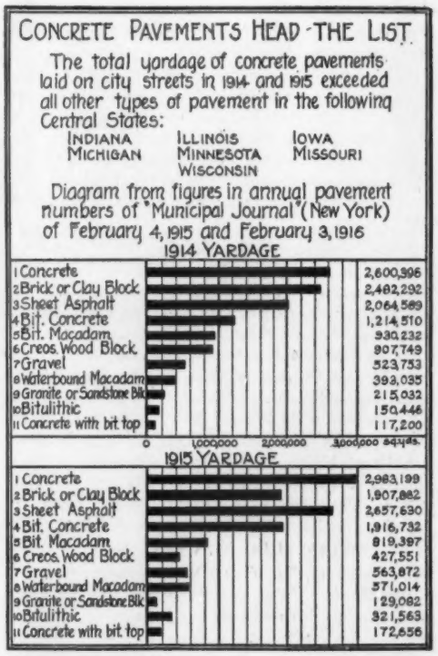


BEAUTY AND USEFULNESS COMBINED.

### COST OF CEMENT ROADS BY STATES.

The average cost per square yard of constructing concrete roads, reported to the Association of American Portland Cement Manufacturers in 1913 and 1915. The figures for 1915 gathered by Association's inspectors:

| | 1913 | 1915 |
|---|---|---|
| Connecticut | $1.32 | $1.13 |
| Illinois | 1.01 | 1.03 |
| Indiana | 1.23 | 0.98 |
| Iowa | 1.11 | 1.19 |
| Kansas | 1.08 | 1.28 |
| Maryland | 1.21 | 1.08 |
| Massachusetts | 1.29 | 0.95 |
| Michigan | 1.27 | 1.10 |
| Minnesota | 1.05 | 1.11 |
| Missouri | 1.17 | 1.09 |
| New Jersey | 1.12 | 1.23 |
| New York | ... | 0.98 |
| Ohio | 1.22 | 1.02 |
| Pennsylvania | 1.16 | 1.01 |
| Texas | ... | 1.15 |
| West Virginia | 1.32 | 1.03 |
| Wisconsin | 1.06 | 1.02 |


CONCRETE PAVEMENTS HEAD THE LIST
The total yardage of concrete pavements laid on city streets in 1914 and 1915 exceeded all other types of pavement in the following Central States:
INDIANA
ILLINOIS
IOWA
MICHIGAN
MINNESOTA
MISSOURI
WISCONSIN
Diagram from figures in annual pavement numbers of "Municipal Journal" (New York) of February 4, 1915 and February 3, 1916
1914 YARDAGE
1 Concrete 2,600,396
2 Brick or Clay Block 2,462,292
3 Sheet Asphalt 2,064,589
4 Bit. Concrete 1,214,510
5 Bit. Macadam 930,232
6 Creos. Wood Block 907,749
7 Gravel 523,753
8 Waterbound Macadam 393,035
9 Granite or Sandstone Blk 215,032
10 Bitulithic 150,446
11 Concrete with bit top 117,200
0
1,000,000
2,000,000
3,000,000 sq.yds.
1915 YARDAGE
1 Concrete 2,983,199
2 Brick or Clay Block 1,907,882
3 Sheet Asphalt 2,657,630
4 Bit. Concrete 1,916,732
5 Bit. Macadam 819,397
6 Creos. Wood Block 427,551
7 Gravel 563,872
8 Waterbound Macadam 571,014
9 Granite or Sandstone Blk 129,082
10 Bitulithic 321,563
11 Concrete with bit top 172,656

Augusta Cement Products Co., Augusta, Ga.; capital, $50,000; incorporators, W. E. Wilbur, president; P. E. Wilbur, vice-president and manager; will erect fireproof buildings; has purchased machinery.

Universal Concrete Co., Kansas City, Mo., has increased capital from $10,000 to $25,000.

Georgia Cement Products Co., Augusta, Ga.; capital, $50,000; incorporators, P. E. Wilbur of Augusta, W. C. Wilbur and T. Wilbur Thornhill of Summerville, S. C., and others.

The headquarters of the Sisk Universal Concrete Tie Co. has been removed from Oakland to San Francisco, Cal.

About 40,000 lineal feet of cement irrigation pipe will be used in the orange growing section about Orange Grove in southern California.

The board of supervisors of Contra Costa county, California, are having plans drawn for the laying of ten miles of concrete highway running from the town of Byron westward.

The Cement Floor Tile Co., of Louisville, has filed amended articles of incorporation increasing its capital stock from $5,000 to $20,000. The amendment was signed by A. R. Ross, S. W. Green, and S. W. Graves, owners of two-thirds of the original capital stock.

# CEMENT

## Cement Meeting at Chicago.

The quarterly meeting of the Association of American Portland Cement Manufacturers was held in Chicago on May 8, 9 and 10. There was a very large attendance of the cement manufacturers and the executive and sales staffs of the cement companies. It was a period of good fellowship, for the conditions of the business prevailing in all sections of the country can truthfully be said to be better than they ever were before, and with good prospects ahead. Practically every man at the Blackstone had the same story to tell when referring to business, namely, that the inevitable advance in the cost of operating has not interfered in any way with the demand, for the necessary advances in the price of cement have been well recognized and they have in fact been less in proportion than that of any other manufactured commodity. All of these things were well recognized and discounted before the meeting assembled, which disposed of the routine business perfunctorily according to program.

On Monday night a banquet was tendered to George S. Bartlett by his friends and admirers in the cement industry. Every delegate and visitor at the convention participated in the very pleasant social occasion during which Mr. Bartlett was presented with a golden casket containing a remembrance in the shape of $6,000 in gold, being the substantial expression of the appreciation of the personality of George S. Bartlett in his work for concrete roads, both for the company that he serves and for the industry as a whole. There is no more popular and highly respected man in the cement industry than Mr. Bartlett, and his wonderful achievements in putting through the cement road proposition was well worthy of this substantial compliment.

The formal banquet was held on Wednesday evening at the Blackstone, and the diners were entertained by speeches from Edward N. Hurley, vice chairman of the Federal Trade Commission, on the subject of "Our Many Business Problems." Another address was by George T. Buckingham, a Chicago lawyer, upon the subject of "Twentieth Century Competitors."

President Benjamin F. Affleck presided at the sessions of the association, and Secretary J. P. Beck, assisted by his staff, officiated with the records of the occasion.

The day after adjournment a party of no less than thirty-five delegates to the convention accepted invitations and challenges from their Chicago friends to participate in a golf tournament at the Flossmoor Country Club. A. M. Bates, inventor of the famous valve bag which is used extensively in the industry, was master of festivities on this occasion. There was some wonderful golf played, and after the better part of the day had been spent on the links the following contestants were awarded prizes for good work on the course. F. R. Bissell of the Texas Portland Cement Co., Phil Hardy of the Dixie Portland Cement Co., E. Ackerman, Jr., of the Lawrence Portland Cement Co., A. Y. Gowan of the Lehigh Portland Cement Co., and E. D. Boyer of the Atlas Portland Cement Co.

### TWENTIETH CENTURY COMPETITORS.

By George T. Buckingham, Attorney, Chicago.

The competitor of the twentieth century resembles the competitor of the nineteenth century about as closely as the Kentucky thoroughbred resembles the Eohippus of the antediluvian period.

The reason the competitor of the twentieth century has changed is because the world about him has changed. The industrial and economic condition of the human race has changed and developed more in the past century than in all the other centuries since Pharaoh.

Those who are privileged to live in this generation have witnessed more history in the making than any other generation of men who have ever lived upon this globe. Part of that history is written in war and in its blood and fire on the continent of Europe, and part of it—the peaceful part—has been written in letters of gold and prosperity in our own peaceful land.

I can perhaps illustrate the rapid movement of modern events by concrete proof. Sometimes people of my profession make broad assertions which are not susceptible to proof, but I am not in that unhappy position tonight. When I leave this pleasant dinner, which I am obliged to do immediately and for which I crave your indulgence, I am to make an address to an audience in San Francisco—by long distance 'phone. This is a literal fact which illustrates the rapid movement of the world.

GEORGE S. BARTLETT,
Honored with a Banquet and Remembrance.

I am also reminded that it is only seven years ago that I foregathered in Berlin with your distinguished guest on a jubilee occasion. On that day Wilbur Wright made an ascension just outside Berlin in an aeroplane. It was the first heavier-than-air machine to be flown in the German empire, and the Crown Prince occupied a seat beside the American aviator. All this less than seven years ago.

When the nineteenth century was young every city of the world was built on the seaboard. Throughout all the centuries mankind has builded his habitations upon navigable water and the intercommunication of mankind as to his person and his property was over the shining pathway of the water and subject to the winds of heaven.

During all those centuries a sleeping giant dwelling in boiling water had sought to tell his story to mankind. But only at the beginning of the nineteenth century had there arisen men whose ears were atuned to the harmonies of the universe to the extent that they were able to hear and interpret that message.

And then the power of this sleeping monster was harnessed to vehicles of transportation by sea and by land and straightway the world stood revolutionized.

Upon the western hemisphere civilization was confined to a thin strip along the Atlantic seaboard, and the great interior stretching from the Cumberland to the Rockies, the richest and finest valley in the world, has remained through the centuries unpeopled, save by the savage and the wild beast.

With the coming of steam all this was changed. No more was there an interior or a hinterland; but from one horizon to the other extended a double band of shining steel, forming the new highway of commerce from one ocean to the other, and straightway where there had been wilderness there came into being splendid cities and smiling hamlets and fertile farms and a civilization second to none in the universe.

No such valley as the valley of the Mississippi has ever existed in the world. It is the natural habitat for a complex and wonderful civilization. Richer and more fertile than the valley of the Euphrates or of the Rhine or of the Nile, it was designed by the Almighty to be the home of the greatest of the races of mankind.

The genius that harnessed steam to transportation also chained that monster to the industrial organization and applied its power to what is called "manufacturing." And then there came into existence modern commerce, a thing which had no existence before the middle of the nineteenth century.

In our youth every village had its shoemaker and its butcher, its wagon-maker and its blacksmith. They composed the center of industrial life. Their efforts were individual and localized and clumsy and inefficient.

But now these have left the village and assembled in organizations, so that manufactured products could be and were more cheaply and efficiently created, and so that mankind could and did have more of the comforts and more of the luxuries of life than it had theretofore enjoyed.

The wagon-makers left the villages to assemble at South Bend. The butchers departed from the villages and foregathered at the Chicago Stock Yards. The "village blacksmiths" gathered in multiplied thousands on the sand dunes at the south end of Lake Michigan.

In order that many men might participate in these activities as shareholders, lawyers created the thing which men call the corporation—the legal entity without soul which holds title to property and administers it for the benefit of a group of individuals, its shareholders. The corporation in its modern sense is an evolution founded upon steam development, and is just as necessary to modern industrial life as the locomotive or the factory building.

With the growth of these enormous entities (or their predecessors), the people at large began to feel a sense of vague concern. They looked with apprehension upon the butcher who was capitalized at one hundred millions, and upon the wagon-maker who was capitalized for fifty millions, and when the village blacksmith left the "spreading chestnut tree" and capitalized his operations at a billion and a half, their apprehension was not quieted

It was out of this sense of insecurity that the first legislation was undertaken by the United States Government. In 1890 the so-called Sherman Act was passed. It was a very simple act, in its language. It prohibited all persons and corporations from entering into contracts, combinations, and conspiracies in restraint of trade, and from forming monopolies. This was its substance and almost its language. If you will look over the debates in Congress at that time you will be impressed with the very indefinite knowledge and idea which our most able men at that time had of economic and industrial problems which were then in the process of evolution.

The Sherman Act was the first attempt by Congress to regulate competitors and the first recognition of governmental concern in business operations. Those who were affected by it immediately consulted their lawyers—as all persons properly do. But to their amazement it was discovered that their lawyers understood this legislation as little as did the clients. It was vague and indefinite to the largest degree, and that fact accounts for the inactivity under it for many years after its passage.

It was not until 1912 that the Supreme Court of the United States came to construe this statute, and by reading into it the word reasonable, to make it a real force, and a workable restriction against business operations which were illegitimate in the commercial as well as the legal sense.

Growing out of this uncertainty and the nebulous and general scope of the Sherman Act, more recent legislation has been enacted in what is now called the "Clayton Act" and the "Federal Trade Commission Act." The formation of this latter body is a landmark in the industrial development of our land. That commission is in reality a court with greater possibilities, and wider powers, and jurisdiction over greater subject matter, than any other court in the United States.

The Federal Trade Commission is a great power for good, and fortunately it has been initially constituted with a membership, which gives promise of the development of the usefulness, and greatest benefit to the people.

Chicago has contributed one of the members to that court, and it invites and challenges any community to show a more worthy contribution to any court.

That commission has grasped the essential fact, and is administering it as a basic rule, that not all competition in the widest sense is the most desirable possible thing. On the contrary, unrestrained competition in the end leads to the crushing out of the weaker members and the inevitable monopoly that results from the ultimate survival of the strongest.

The Trade Commission recognizes that the thing which is most to be deplored is unfair methods of competition. If you will look through nearly all of the adjudicated cases you will find that the real complaint which the public has against entities that tend to restrain trade, is not so much directed at the competition itself, as at the particular methods which are unfair, immoral, and unethical. If every competitor can be forced to compete by fair, and not unfair methods, a great advance has been made in the solution of this subject matter.

But I digress. The competitor of the twentieth century differs greatly from his predecessor of the nineteenth century. When I was a boy a notable characteristic of the competitor was his isolation. Each man considered his competitor as his natural enemy and treated him accordingly. In the small communities it was not infrequent that competitors were not on speaking terms. But in the twentieth century, as here exemplified, the competitor has discovered that his competitor who serves the public in the same capacity as he himself serves, is his natural ally and his best friend and that the things which they have in common are ten times as important, as the trade rivalry between them; so the twentieth century competitor is a friend and not an enemy.

When the nineteenth century was young the competitor regarded his operations as secret. It was a calamity for one competitor to discover the facts concerning the business of another. Now all that has passed. The intelligent competitor of the twentieth century turns the sunlight of publicity upon his affairs for the benefit of all in the same business. The first and fullest possible interchange of information, concerning the facts of common interest, in any given line are of the greatest possible benefit, not only to those engaged in the business, but to the public as well. The largest interchange of information tends to stabilize every industry, and to protect the public against unfair competitors, as well as to protect the competitors against the unfair action of the public.

But there is another side to this competition question which appeals to me as not only important, but vital. We live in a Republic. We have the individual form of democratic government. We believe in the freedom of the individual and we deprecate the monarchical form of government which subordinates the individual to the state. The weakness of the Republic has always been that in the clash of arms between it and its neighboring monarchy the superior cohesion and civilization of the latter has usually resulted in its supremacy and in the destruction of the popular form of government.

We are now confronted as a nation with great international problems. They are threatening us from the east and from the west, and may at some date in the future—near or remote—involve us in the clash of arms with some other great power, with conflicting interests and ambitions.

If under the providence of God any such clash should occur, it must then be tested whether or not the individual form of society is strong enough, and organized enough, and co-operative enough, to hold its own against the more organized and centralized forms of monarchical or semi-monarchical government.

Now, in the modern warfare of the twentieth century, industrial organization is all important. And it may well be that the life of this Republic may at some time depend upon the degree of organization and co-operation that can be voluntarily brought about among those who are competitors with each other in our great industrial affairs.

When that day comes I sincerely hope that every competitor will feel his duty to his fellow competitor and to the government under which we all live, so that the unselfish and unified efforts of all may be turned to the common welfare and may perhaps become the deciding factor in the perpetuity of our institutions.

The competitor of the twentieth century is young as yet. He has not yet evolved into his full ethical growth. It is probable that toward the close of this century our grandchildren will look back at us and view our efforts as crude and unseeing, even as we designate the viewpoint of the men of 1890 who first grappled with these questions as crude and unseeing.

In the melting pot of America, which absorbs every nationality and makes it American, so also will we reduce from their crude form the great social and economic questions that confront us, until in his full stature the competitor of the twentieth century will stand as an ethical business man, pursuing policies which are nationally valuable, and morally defensible, and which will make him not only a strength but an ornament to our common land.

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According to the report of Receiver Guy W. Mallon, of the Superior Portland Cement Co., covering the month of March, shipments for the month fell off 2,000 barrels as compared with last year, for no known reason. A breakdown in the power plant caused some delay, and until April 18 it was necessary to operate at about one-third capacity. The company's cash balance as of April 1 was $25,590.

## LOUISVILLE DEMAND OPENS SLOW.

Louisville, Ky., May 4.—While the demand for cement is slow in developing, the general outlook is considered excellent. There is a large volume of street and sidewalk work in sight and several big government and municipal contracts. One of the largest contracts is that on the new government dam to be built at Louisville instead of at Madison, Ind.

Henry S. Gray, of the J. B. Speed Co., reports that the company has the contract for furnishing cement on the new building to be erected by D. H. Ewings' Sons as a creamery at Third and Kentucky streets. A good demand for lime is being felt from the rural districts, and a fair demand for building operations. The company is still having some trouble in getting cars at its plants in Indiana, but the situation has been relieved somewhat.

From Middlesboro, Ky., come reports to the effect that plans to revive the movement to erect a cement plant are under way. Victor Bentner, of Kansas City, Mo., was recently in the city in the interest of the proposed plant to be erected at Cumberland Gap.

## BOLIVIA GOOD MARKET FOR CEMENT.

The annual importation of Portland cement in Bolivia is in the neighborhood of 200,000 barrels, most of which formerly came from Germany, according to U. S. Special Agent J. A. Massel. Any good brand can be introduced if it compares favorably with the best known grades already on the local market. Quotations must be made c. i. f. port of discharge. Cement is usually sold in barrels of 400 pounds each. In sacks it has a very small demand and can only be imported during the dry season, from June to October.

## TO OPEN PLANT AT EXSHAW.

Mr. F. P. Jones, manager of the Canada Cement Co., states that the raise of ten cents on cement in paper bags will not affect the price of cement in Canada. Cement is quoted here at $1.55 in carload lots.

The Canada Cement Co. intend opening their plant at Exshaw, Alta., on June 1. Mr. A. H. McGuire, Calgary, is manager of the Canada Cement Co. at Calgary, where the product of this plant is chiefly handled.

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The Alpha Portland Cement Co. recently announced from its main office at Easton, Pa., that the wages of all employees in the manufacturing department have been raised ten per cent effective May 1. It is the second ten per cent raise granted by the company since the first of January. In a statement concerning the increase the company claims that wages in the cement industry have practically doubled in the past fifteen years.

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The Marquette Cement Manufacturing Co. recently closed a contract with the Wisconsin State Board of Control for 17,000 barrels of cement. The board will use a portion of this for the new state Home for Feeble Minded, which will be erected at Union Grove, and the Hospital for Criminal Insane at the State Prison at Waupun. The Marquette company got the contract earlier in the season to furnish Milwaukee county with over 100,000 barrels for use in building about thirty miles of concrete roads this summer.

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Cement men of the Louisville district are very much interested at this time in the big work which has been started on the bridge of the Louisville Bridge Co., at Louisville, which is used by the Pennsylvania railroad. The bridge is to be double tracked, and the cement contracts will probably be large, as the piers will have to be widened. Work has been started on the abutments on the Indiana side.

## OUR MANY BUSINESS PROBLEMS.

(Continued from page 21.)

and our factories are running on full time, that our manufacturers will place capacity ahead of expansion. I hope that, instead of rushing to build additions to their plants, they will ascertain whether or not their present equipment has reached the maximum of a day's work, and then develop the night shift so that every piece of machinery will be working to its limit. We have an example of what American manufacturers can do along this line in the automobile industry.

We should get away from that old-fashioned notion that the night crew is lacking in efficiency, and that its workmanship is not up to the standard.

There has been overanxiety to enlarge our industrial plants before we have worked our present equipment to its capacity. Consequently, when there is depression in business in this country, we have an overproduction for our home requirements; and with no large foreign markets for our surplus of manufactured goods, we immediately start to cut prices, on the plea that such action is necessary in order to keep the plants running to their large potential capacity. This always results in a general demoralization of our industries.

If we can stop this overproduction, we will have a surplus of money to invest in foreign countries, instead of having millions tied up in plants that are running three days a week to supply our domestic market, with no returns on the investment.

With present business and profits holding through this year our industrial concerns will reach that commanding position which comes with great and ready cash resources. Among some of our larger concerns this position already has been attained. The United States Steel Corporation began the present year with $105,000,000 in cash. This largest of our industrial companies never before reported cash holdings in excess of $68,000,000. Other concerns, especially those engaged directly in war business, have immense cash holdings.

Our industrial concerns, in short, are fast getting into condition to finance greater business than ever before, not only at home but abroad. They are getting to a place where they will be able to make contracts, say with South American countries, on a basis never before possible to Americans, and to do it without special arrangements with bankers.

One of the commanding holds upon foreign trade which the German dyestuffs manufacturers had, before the war set a barrier against them, was their immense power in working capital, which enabled them to extend credits and to conduct all sorts of aggressive campaigns to get world business. We are getting into a position where we can profit by this example. This will aid us in getting the greatest benefit out of the situation.

Trade associations that are putting forth a special effort to improve their systems of cost accounting, bettering their process of manufacture, obtaining credit information, and endeavoring to improve the welfare of their employees will be important factors in our country's development in the next few years.

Special commendation should be given to associations that are endeavoring to build up industry in these constructive ways. Successful production and successful merchandising require many steps in the process of changing the form of the raw materials, and putting the product on the market at a figure adequate to cover the cost of production and the cost of selling and net some profit to the producer, without charging the consumer an excessive price; and neither the individual manufacturer nor the government can alone work out the many serious economic and business problems involved, with the same success as can a group of associated producers, laboring and coöperating together. These associations, when conducted intelligently and rationally, with the thought of bringing about improved business conditions, will make it possible for our industries to compete in price and quality in the markets of the world.

Trade associations should not only be encouraged to increase their membership, but should be furnished by the government with complete statistics in their particular line and be assisted in every way to develop and stabilize the industry which they represent.

There should be a greater degree of organization and of mutual helpfulness in all lines of trade and industry, so that American business may be welded into a commercial and industrial whole. The part of the government is to coöperate with business men, on request, and to bring about the results that will benefit business and hence promote our national welfare.

### European Cement Industry Organized.

In European countries the cement industry is organized and centralized to a considerable extent. Wherever cement is manufactured, associations and combinations have been formed among manufacturers and dealers. We find such combines among the cement producers of England, France, Belgium, Russia, Sweden, Norway, Denmark, Austria, Switzerland, Italy, and even Rumania. England once virtually monopolized the world's markets in the cement industry, and by means of preferential tariff agreements with its colonies, which placed other countries at a disadvantage, English cement is still exported in considerable quantities to Australia, Canada, Egypt, and other British possessions.

In recent years the German cement industry has made such remarkable progress that its product has superseded very largely those of English manufacture in several countries. The secret of success achieved by the German cement industry is to be found in the coöperation of manufacturers and dealers with a common aim to promote and improve their mutual business interests, and the employment of the most up-to-date results of chemical research and the application of efficient technical methods and standards.

Virtually the whole cement industry of Germany is organized into and controlled by five large cartels which combine about ninety stock companies. These different cartels are again interrelated with one another and have agreements and understandings among themselves as well as with cement syndicates in other countries.

All German cement interests are united in the Association of German Cement Manufacturers. In many respects this body is a model trade organization. It offers a typical example of how coöperation among manufacturers of a certain line of business can promote and further the industry in which they are engaged, to the mutual advantage of all. Under the auspices of this association chemical research work on a large scale has been conducted for a number of years. It has proved highly successful from the technical as well as from the financial point of view. As a result of the joint working together of the members of this association a standardized product has been established, and this has contributed materially toward the development of the German export trade in cement. The association requires its members to put a product on the market which comes up to certain specified minimum requirements. One of the main efforts of the association, in fact, consists in constantly impressing upon its members the fact that it is their duty to produce a uniform and high-grade product only.

Belgium is an important factor in the cement business of the world. The seventeen leading Belgian cement producers are combined in a syndicate whose central selling agency is located in Brussels. They act as a unit and export cement to many countries. Their chief markets are Holland and Argentina.

The estimated production of Portland cement in the United States for 1915 was 85,732,000 barrels. This production is about seventy per cent of the capacity. If a foreign business could be developed that would take up this surplus capacity and allow the mills to run at a maximum it would prove a great benefit to the country and to the cement industry.

The reason for the advantage enjoyed by European countries in exporting cement is due partly to their better transportation and credit facilities, but to a far greater extent to the coöperation or combination within the industry itself. Not only have combinations existed among cement producers of each European country, but agreements or combinations have existed between different countries.

The German cement syndicates also have separate agreements with Belgian, Swiss, Danish, and Austrian cartels. A few years ago the South-German, Belgian, English, and Norwegian syndicates made a joint agreement with regard to supplying Holland, which produces little or no cement.

Conservation is the handmaiden of prosperity so far as our foreign trade is concerned. Right here I want to emphasize the fact that the owners of our vast natural resources are the trustees of the American people. When they sell their products at ridiculously low prices—the lumber, the copper and the coal that come from nature's storehouses—they are violating their trust, for ruinous trade spells a waste that brings nothing in exchange. Let me call your attention to a few facts pertaining to our foreign trade in its relation to natural resources, and to facts concerning the methods to prevent waste that are employed by some of our competitors in the commerce of the world. With these facts the members of your association are well acquainted, but this is a propitious time to give special thought to them.

Frankfort-on-the-Main is the home of a combination of German metal buyers who control the world market for copper, lead, zinc, and various other metals. It is a family affair, and has subsidiary companies in England, France, Belgium, Switzerland, Australia, Africa, Mexico and the United States.

It owns zinc mines in Oklahoma, smelters in Colorado, and controls one of the greatest metal trading companies in New York City. This giant organization with its affiliations dominates the metal markets of the world. Time and again it has depressed the price of our copper. It is a notorious fact that it has compelled our producers to sell copper to foreign buyers at lower prices than to our home users. In spite of the fact that this country supplies two-thirds of the world's copper and ought to set the prices, the combination has been able to do this because it deals with our producers as individuals and plays one against the other.

We don't export much coal, but we sell a great deal to foreign shipowners to bunker their vessels which call at our ports. At Newport News the Pocahontas and New River operators of West Virginia are dumping some of the finest coal in the world into foreign bunkers. The price is set for a year by a combination of English brokers. Last year it was $3.30 per ton, but this year in the face of rising labor costs the combination was able to cut that price to $3.10 because it could get certain mine operators to make low bids. When freight and other charges are deducted this nets $1.38 to $1.43 per ton at the mine, an average of six to seven cents per ton under that charged our own manufacturers. That advantage will be given to foreign shipowners on nearly 2,000,000 tons of West Virginia coal this year.

When conditions arise to threaten waste of the natural resources of our commercial rivals, prompt measures to stop it are taken.

Several years ago two German potash miners were competing among themselves and selling potash to foreign countries at a ridiculously low price. Finally they formed a cartel to regulate prices, and were encouraged by the German government. After this cartel had been in existence for several years a difference of opinion developed and several members withdrew and started negotiations with American buyers for the sale of their potash. One of the largest opened up negotiations with Armour & Co. of Chicago, and a contract was made with this firm below the cartel prices. After the contract was sealed, signed and delivered, the German government notified the independent potash producers that they would have to break the contract; that the prices quoted to Armour & Co. were too low; that

while the individuals were the owners of the mine they were in reality the trustees for the German people; that the selling of potash to American packers at the price quoted affected every man, woman and child in Germany; and that when the potash was gone one of the most valuable resources for Germany's future was destroyed.

* * *

There are many instances where foreign nations have taken governmental action to prevent waste of natural resources. Italy thus saved its sulphur industry in Sicily from ruin threatened by overproduction and unbridled competition. Roumania has safe-guarded its rich oil fields in the same way.

The outstanding fact that confronts us is this: When we buy abroad we are at the mercy of the foreign seller, and when we sell abroad we are at the mercy of the foreign buyer. In the language of the street, they "get us a-comin' and a-goin'." And the reason is that the European industries are organized scientifically to capture foreign trade and to get all there is out of it, while we in America have suffered the consequences of this one-sided organization. There is no agency more able to put American trade on the footing it ought to occupy at the end of the war than the Association of American Portland Cement Manufacturers.

Our method of disposing of our natural products, containing our valuable raw materials, and constituting the chief wealth of our country, should be stopped by the adoption of some practical, reasonable business method.

Competition is the same the world over, and it will be particularly keen when the business of peace is resumed among the nations. America's chance at the trade of the world will be helped beyond what it was before by reason of a new, even start with the others in the race, but we must be prepared to match systematized industry against the effective systematized industries of our competitors. We must meet conditions as they exist.

If our business men are to be factors in the world's markets they must receive encouragement to do as our foreign rivals are doing, and the Federal Trade Commission has recommended to Congress that a bill be passed giving the American manufacturers the legal right to form coöperating selling agencies in export trade.

The Federal Trade Commission does not believe that Congress intended by the anti-trust laws to prevent Americans from coöperating in export trade for the purpose of competing effectively with foreigners, where such coöperation does not restrain trade within the United States and where no attempt is made to hinder American competitors from securing their due share of the trade. It is not reasonable to suppose that Congress meant to obstruct the development of our foreign commerce by forbidding the use, in export trade, of methods of organization which do not operate to the prejudice of the American public, are lawful in the countries where the trade is to be carried on, and are necessary if Americans are to meet competitors there on equal terms.

By its investigation, the commission, however, has established the fact that doubt as to the application of the anti-trust laws to export trade now prevents concerted action by American business men in export trade, even among producers of non-competing goods. In view of this fact and of the conviction that coöperation should be encouraged in export trade among competitors as well as non-competitors, the commission recommended the enactment of declaratory and permissive legislation to remove this doubt.

We feel that we would fail of our duty if we did not urge the pressing need of such action immediately. If American business men are to make the most of the great opportunities now before them, are to build securely in foreign trade, and are to avoid disaster in the shock of the stern and determined competition that will doubtless follow the war, they must at once perfect the organization demanded by the conditions of international trade.

# ROAD BUILDING

## WEST ANXIOUS TO IMPROVE ROADS.

The enthusiasm for good roads is spreading rapidly over the central west—and not simply good dirt roads, but hard surface roads. The rains of last year did a great deal to crystallize sentiment in favor of sensible roads. Bond issues are coming up for vote every week or two; and even if they do not pass, they indicate that the public is awakening to the need of proper facilities for produce and pleasure travel. Early in June an issue for $1,250,000 comes up in Clay County, Missouri, just out of Kansas City, and prospects of its carrying are good. Kansas road workers are laying plans for work in the next state legislature, which will make it easier to put through road projects. The Kansas Good Road Association is sending out literature explaining its platform for a campaign this year. They are advocating the removal of the constitutional provision prohibiting the state from granting aid for highway improvement; codification of highway laws, establishment of the state highway department, enactment of laws providing for efficient road management and maintenance, an enabling act providing for the creation of benefit districts, and the employment of city, county and state prisoners on public highways.

B. K. Coghlan, associate professor of highway engineering at the Texas State Agricultural College, recently wrote a letter to J. Frank Smith, manager of the Kansas division of the Jefferson highway, that is of interest. Part of it follows:

Judging from some of the literature which I have received from your office, I imagine that the farmer in Kansas and Missouri is a good deal like the farmer in Texas, that is, the size of the bond issue for hard surface roads scares him.

I have found that the only way of handling this proposition so that it will be thoroughly understood by the average man in the community is to get down to the actual dollars and cents cost to him. As a typical example, take the case of a county having an assessed valuation of $10,000,000 with a bond election call for $400,000 issue. In this state the average farmer owning 160 acres of land would pay taxes on something less than $2,000 valuation. A $400,000 bond issue, such as mentioned above, would call for a tax something less than thirty cents on the $100 for a forty-year bond issue or about thirty-two cents on the $100 for a thirty-year bond issue. The average farmer would be called upon to pay between $6 and $6.50 a year taxes to support this bond issue, or less than two cents a day, or again, less than four cents per acre per year.

We have yet to find a farmer in Texas who is willing to go on record as saying that this amount will cause his financial downfall. And while we have considerable opposition in some communities to road bond issues, the fact remains that along the Jefferson Highway alone more than a million dollars in such issues have been voted in the past six months.

## CAUSES OF BAD ROAD RECORDS.

Operative causes actually found to account for the poor results sometimes observed in concrete road construction are listed as below in a pamphlet, "Concrete Pavements in Western Washington," recently published by Reitze, Storey & Duffy, Inc., of Seattle, Wash. They are all traceable to mistakes in judgment, to ignorance, and to lack of study of the correct methods to be followed.

1. No rolling of subgrades, even on fills up to 20 feet in depth.

2. No wetting of subgrade immediately preceding placing of concrete on the hottest of days.

3. The use of unseparated and unwashed aggregates, more commonly called "pit-run" material, used in proportion of the sum of two aggregates when separated.

4. The most careless handling and protection of the aggregates until such time as they are mixed with the cement; "I have seen aggregates piled alongside the road, so dust-covered and so thoroughly mixed with dirt from teams driving over them that at first glance one would think these piles of aggregate were simply dirt excavated from the subgrade."

5. Dirty and unclean water used.

6. The concrete poorly and carelessly mixed, handled, and placed.

7. The concrete burned and dried too quickly by reason of no covering and lack of wetting down and keeping wet after placing.

## SIOUX CITY ROADS ATTRACTING ATTENTION.

Some of the most interesting discussions of the Chicago meetings of the Concrete Institute and Conference on Concrete Road Building in February were those precipitated by T. H. Johnson, city engineer of Sioux City. Mr. Johnson advocated several things that weren't exactly according to "Hoyle" and the success of Sioux City concrete paving furnished ample reinforcing for his remarks.

A news item from the Sioux City Journal would indicate that Mr. Johnson's work is getting national attention.

Sioux City has been chosen as "demonstration city" by the Portland Cement association, an organization that has for one of its objects the development of the concrete paving field.

Robert F. Hall, general manager of the national concrete products exposition in Chicago, who is manager of the roads bureau of the cement association, came to Sioux City today with a delegation representing the real estate board of Milwaukee, and inspection of the paved streets, highways and actual paving operations now under way is being made.

A. N. Johnson, consulting highway engineer for the association, was with the party. Representatives of the real estate board were M. J. Shenners, president of the organization, and Ed Porth and William E. Hamilton.

"These Milwaukee men wanted to know if concrete pavement was worth while, and as Sioux City is credited with having the best concrete paving in the country, it was natural that Sioux City should serve as the mecca for weary pilgrims seeking information," said Mr. Hall.

City Engineer T. H. Johnson accompanied the party in the tour about town. The members watched pouring operations in Fifth street and in Twenty-seventh street during the morning. Sioux City paving methods are different than those in general vogue.

Sioux City's success with concrete is to be given general publicity through the national association. Letters from City Engineer Johnson, dealing with the pavement qualities developed here, are being given wide attention. Addresses regarding Sioux City pavements, made by Mr. Johnson, also are being quoted. The result of this publicity has been to flood Mr. Johnson's mail with inquiries. These letters are coming from both the Pacific and the Atlantic coasts. The delegation from Milwaukee is the third one from that city to make a local investigation.

## WISCONSIN "GOOD ROADS" MEN ORGANIZE.

The Good Roads Association of Wisconsin has filed articles of incorporation. The membership is composed of several hundred good road enthusiasts of the state and plans have been laid for a campaign which will enlist 25,000 members from among the people of Wisconsin.

It is planned to name seventy-one vice presidents, one from each county, to complete the organization. C. C. Jacobus, Wauwatosa, will serve as president and William H. Reese, Milwaukee, as secretary of the new organization.

Commissioners of Allegheny county, Pennsylvania, have received bids for resurfacing and improving twenty-six miles of county roads at an approximate cost of $200,000. Twenty-seven bids—the largest number ever received on an Allegheny county job—were put in. Awards will be announced next week.

A bond issue of nearly $400,000 is being shaped up in city councils for the improvement of East Ohio street, North Side, from Heinz street to the city line. As soon as this much needed improvement is completed the boroughs of Sharpsburg and Millvale promise at once to improve their connecting streets, thus making a splendid thoroughfare up the Allegheny river from the North Side Market House.

# LIME

## The Burning Problems.

The burning of lime is the oldest process known to the mechanical arts. It came along with the development of civilization out of the dim and mystic past, and was one of the things that was taken for granted when writing was a very exclusive and precious art, known to but very few people who were not interested in such practical operations as that of producing building materials.

It was in fact taken for granted in much the same way in every particular locality of the world up to the time when men now living first became interested in the business. Up to very recent times the popular and almost exclusive method of burning lime consisted of breaking off a number of pieces of rock by the hardest kind of labor, with the crudest kind of tools, and making a pile on the ground resembling a funeral pyre, about as follows: A double floor of dry logs, one laid crosswise of the other is placed on the ground, then a layer of the quarried rock piled on top of the logs, another layer of dry logs and another pile of quarried rock until four floors of wood and four floors of rock constituted the finished pile. Then the bottom logs were set on fire and other dry logs and brushwood were heaped upon the burning pile as the fire progressed, particular reference being given to throwing the greater part of the fuel upon the windward side, so that the tongues of flame would be driven against the rock and so envelop them, and at least, partially calcine them.

This was considered the best kind of practice 150 years ago, and at least one instance of this same practice occurred in the year of grace, 1915, and it is very probable that many other cases of the calcination of lime by this time-honored process occurred outside of the knowledge of this writer.

The pot kiln, which was first built of stones from the same quarry as the rock to be calcined, with the beds and joints of the rough and irregular rubble filled and smeared with mud, was a great improvement indeed, and constituted the most popular practice thirty-five or forty years ago, and as late as twenty years ago, seventy-five per cent of the tonnage was produced in these roughly built pot kilns.

It was a tremendous innovation, indeed, when the first stone kiln was built using regularly selected rubble with the beds and joints laid in cement mortar and lined with refractory fire brick, laid in fire clay. Such a kiln was dubbed "patent" kiln by the rule-of-thumb lime burners who worked at the quarries the third of a century ago. They say that the lime burned in their old pot kilns, or even in the combustion pile was a different product from any that has ever been produced in the so-called "patent" kilns, always with the insinuation that the lime burned in the patent kilns was not so good as that which came from the previous processes.

Probably the contractors who used the earlier lime knew how to handle it and use it so much better than their successors, that the superior material produced in the "patent" kilns did not give as good results, for the present state of knowledge of lime, its handling and its uses by the people who use lime in the building trades particularly is about as near to zero as anything we are acquainted with.

If the old-time mechanics knew anything at all, they had just so much on the present coterie who surround modern building jobs to collect the big union wages by knowing just as little and doing just as little as possible. Really, if a man knows which end of the hoe to put in the mortar box without being shown or told, he ought to be paid above the scale, for the best thing that modern mechanics seem to be proficient in is the spoiling of good materials, and of these lime is the principal sufferer. If it hadn't been for the development of the process of hydrating so as to make lime from 85 to 90 per cent foolproof at the job, amidst the babble of many tongues, it would be impossible to use it with any results at all.

But to return to the burning proposition, which has been shown to be such a comparatively new development of the mechanical arts, in spite of its ancient and indispensible place in the progress of civilization, we have really progressed very little in anything that looks like exact and dependable knowledge of the process of burning.

Every lime burner doubtless has accumulated a great deal of practical knowledge with regard to the burning process in connection with his own operation. Lime burning is done very successfully, and comparatively speaking, upon a reasonably economical and profitable basis. When it gets to such a point it is considered good enough, and future practice is settled thereby and so the operation proceeds year in and year out upon an established and presumably known basis. In this way the burning practice and its details have been developed for each particular plant, and that is about all there is to it. It is yielding a profit in this way, and that is what we are in business for, and nobody cares to make any changes or dares to. Although if some real basic knowledge were developed on the subject it might be made much more profitable than present practice has evolved in a great measure by the application of the rule-of-thumb.

It is all very well to assume that lime rock as made by nature contains a heavy acid gas constituting from 40 to 45 per cent of the natural material, and to further assume that all that is required is to subject the rock to such a heat as will drive out the gas and leave the empty sponge of unburnable material, which thereby become quicklime. This is a good rough description of the process of lime burning, but lime burning consists of handling large quantities of a very heavy natural material and other large quantities of fuel material, the handling of both of which is very expensive if done by ordinary hand labor with simple working tools. Mechanical appliances are necessary in order to economize the fuel so as to extract its heat with as little waste as possible or the cost of burning the lime very rapidly increases.

It happens that nature has very seldom made deposits of lime rock that are perfectly pure, the impurities present are generally silicates, which do not burn in the kiln and continue to be a part of the lime, or else they partially vitrify and make a kind of clinker, which continues to be a part of the finished lime. A large proportion of lime rock is a compound of two mineral bases in place of one, which is still lime, although in a few instances magnesium exceeds calcium in the compound, and from this it varies by every proportion to pure calcium stone without any magnesium at all. The burning problem of every one of the different proportions of this compound makes a new variation in the burning process, and after all of this is taken into consideration, the fuel must be considered, whether it be wood, mineral, coal, oil, lignite, gas derived from coal, or powdered coal, each of them have various proportions of impurities and these impurities become a part of the burning problem. Some of the impurities of the combustibles become gases and others are carried in gases as the vehicle of their transportation. Some of these impurities are driven out of the top of the kiln by the heat generated, and some of them are not. Those that are not carried off become a part of the contents of the kiln and are drawn with the lime and so become a part of the lime that is the product of the kiln. The impurities so introduced by the combustion of coal and powdered coal are different from those introduced by the use of producer gas made from the same coal. The impurities introduced by mineral oil are different from either of these, and none of these are similar to those that are introduced by the burning of various kinds of wood. There was a time when nothing was used for lime burning except direct firing with pine knots and stumps. In another locality the favorite wood was oak, and later mixed timber was used for lime burning and each and all of these fuels have acted in a different way upon the lime rock being calcined in the kiln, and the product has varied slightly, perhaps, in some cases, and more markedly in others, but always there has been a difference imparted by the fuel contact in the process of burning.

The duration of the rock in the heat zone of a lime kiln has another important bearing upon the character of the finished product. The average size of the pieces of rock fed to the kiln, has something to do with the duration necessary in the burning or heat zone. It takes a longer time to calcine a big piece of rock than it does a smaller one, and it is a practical impossibility to get all of the pieces of exactly the same size, so that the smaller pieces of rock would be overburned and suffering recarbonation in the kiln, before the larger pieces would be thoroughly calcined. For this reason it is common practice to carefully draw the kiln when the average sized piece of rock has been thoroughly calcined and let the uncalcined centers of the bigger pieces come out of the kiln as "core." In the new process of rotary kilns the attempt is made to get each and every piece of the raw material to exactly the same size by a screening process so that a more exact calculation of the duration in the burning zone can be made practical.

The condition of the rock as nature formed it, whether crystalline of a highly developed character, or one in which crystallization is hard to identify has a very important bearing upon the time required for burning and the degree of temperature necessary to disassociate the heavy acid gas, as well as the tendency to accumulate impurities that are derived from the fuel or inaccuracies of the process of burning.

The particular method and practice of burning has a distinct bearing upon the behavior of lime when water is put to it for the purpose of slaking it into putty, for the change of the management or working crew of a given quarry, using practically the same limerock and with fuel derived from the same source will make a very different product. After the putty is developed the difference still carries on into the mortar when it is mixed with sand, and so from the same quarry, the same fuel and the same equipment, a different product has been made with the management believing that they cannot produce but one kind of material from their plant. They hold the complainant entirely out of order who says, "Your lime suited us exactly last year, but it doesn't seem to be as good by any means at the present time."

The management insists that they are making exactly the same material, and really the only difference is that they have a new set of workmen out at the plant, who are burning the lime a little differently from what the other crew did last season.

The burning problems in connection with the lime industry has had a very great bearing upon the successful hydrating of the product of the kiln. It is the same difference registered at the putty box as cited above. Burned in one way the lime makes a splendid hydrate and with a slight variation in burning it is very hard to get good hydrating results, if at all profitable results.

Realizing that in all probability these same problems have been the subject of much thought with many of those who think in terms of lime burning, we cordially invite all the observations that can be collected for publication upon this subject. It is only by concentrating the experiences from all available sources that there will ever be any valuable and dependable information developed on this important subject. It may be well worth while recording every man's opinion so that with a better knowledge more consistent and probably larger profits can be made out of the burning of lime.

## The Standard Barrel.

The special legislation, with regard to the standard lime barrel adopted at the Cleveland convention of the National Lime Manufacturers' Association, provides for the small barrel of lime of 180 pounds net, and the large barrel of lime consisting of 280 pounds net, is now before both houses of Congress and needs the support of every lime manufacturer. If you have not already responded to the letter sent out by President Carson, by writing to your congressman and senator, asking for prompt action to be taken, it is high time that you do so.

Senator Moses E. Clapp, of Minnesota, is chairman of the senate committee on standards, weights and measures. This gentleman presented the bill and had it referred to his own committee on April 8. Representative James Hay, of Virginia, presented house bill 14298 on April 6 and it was referred to the committee on coinage, weights and measures of which Representative William A. Ashbrook, of Ohio, is chairman. It is well to remember in writing to the lawmakers to ask that the penalty for not complying with the provisions of the bill be made effective one year after its passage, in order to give full time for all manufacturers to adjust themselves to the change without undue inconvenience.

Members will recall the spirited and very intelligent discussion of the standard barrel subject before the Cleveland convention, and the unanimous opinion that the recommended legislation be pushed as vigorously as possible. President Carson, as usual, has done his part with vigor and ability, and every manufacturer of lime can help the good work as suggested above. The bill should be passed and become effective July 1 next.

The Provincial Lime Co., Limited, with headquarters at Brockville, N. B., have been granted letters patent. The promoters are H. A. Allison, G. E. C. Gandy, R. D. Paterson, S. G. Olive and Harry E. Reardon, all of St. John. The purpose of the company is to carry on a general business of quarrying and manufacturing limestone and all of its products.

If a man representing himself to be R. H. Vanderhoof, of the Vanderhoof Lime Co., of New Jersey, applies for a position as salesman on a commission basis or otherwise, it will be well to remember that H. I. Taggart, manager and treasurer of the Agricultural & Commercial Lime Co., 527 Renkert building, Canton, Ohio, has his past references.

# Some Practical Suggestions for Lime Storage Bins

Since the general introduction of commercial hydrates the storage of lime has been simplified so that the original paper package, shipped out from the hydrating mill, becomes the final container of the product until it is delivered at the job. It is readily unloaded from the car, stacked in the dealers' warehouse and loaded out again without any perceptible deterioration while contained in its original paper package during six months and possibly for a whole year. We have repeatedly made very careful inspection of original packages that were more than one year old, and found them to all intents and purposes for building and concrete uses just about as good as they were the first day the car was unpacked. On the other hand we have seen packages that had been stored under an open shed that were pretty badly recarbonated after three or four months. The safety, convenience and economy of the handling of lime in the shape of a hydrate is one of the most attractive features that has won for the type such widespread popularity throughout the trade.

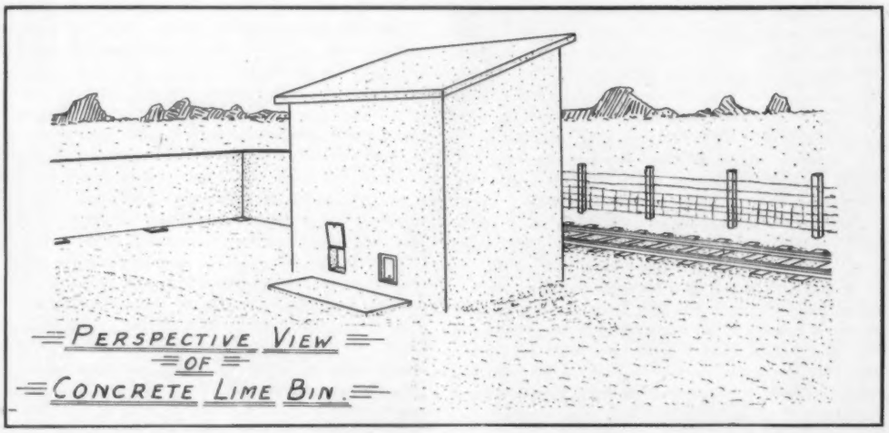
Still there are quite a number of old-fogy contractors located for the most part in small towns who insist upon using bulk lime just as it comes from the kilns, and in the arts there are a number of processes which require freshly burned bulk lime.

In all such cases the long established practice has been to load the box car directly from the drawing floor by means of wheel-barrows or a chute, after sweeping out the interior of the car more or less carefully. As the car is filled at the two ends, grain doors are placed in the middle of the car and it is so loaded to capacity. Upon arrival at destination every car loaded in this way must be unloaded into some sort of a receptacle, which is either suitable or unsuitable for the purpose and for the most part such receptacles are unsuitable according to our observation, which has extended over the United States and Canada fairly well. For this reason it is altogether in point to discuss a more intelligent provision for the storage of bulk lime, whether it be at the establishment of a dealer in builders' supplies or whether it be the plant of a manufacturing establishment that uses lime as a raw material in one or more of its processes.

In a number of places we have seen lime storage bins made of boiler plates, the sheets being riveted together so as to make a perfectly air-tight iron vase for the storage of bulk lime, and we have also seen a great variety of wooden bins, some of them with double walls and some of them mere pockets. In one case bulk lime was stored in a dealer's stable where he uses an empty horse's stall, that was boarded up part of the way, for a lime house. The lime was shoveled through the window from the outside, and barrels filled or the loose material shoveled into wagons from the inside of the stable, for delivery. It is just as well to view the matter intelligently and provide the right kind of storage for bulk lime, and the following suggestions may be well considered in this connection.

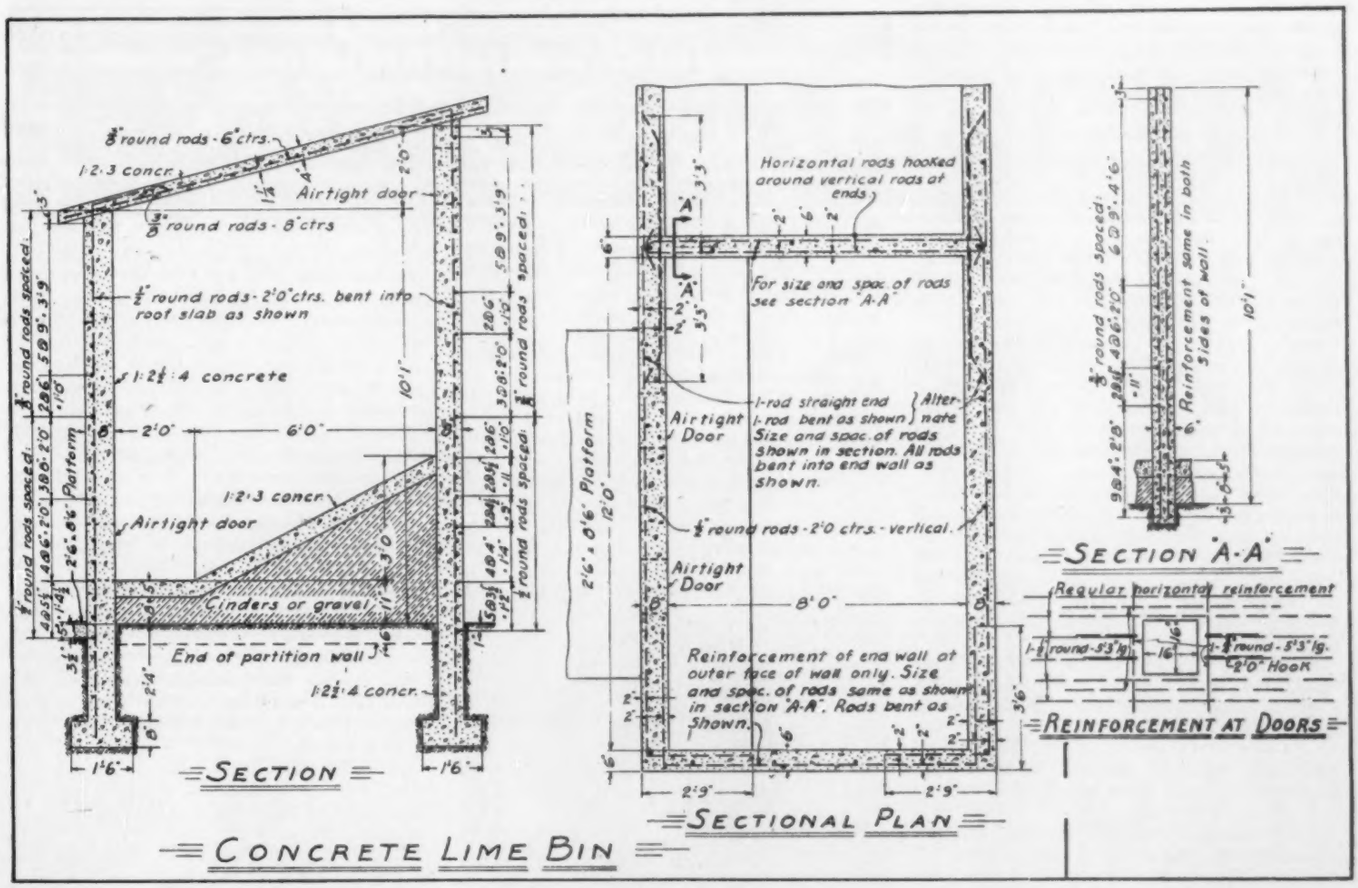
High calcium and calcium limes slake rapidly on the addition of water and evolve much heat in the process. They also expand greatly, giving a large bulk of slaked lime. Magnesium and dolomitic limes slake more slowly and give off but little heat during the process.

Successful storage of lime involves maintaining the material as nearly free from carbon dioxide as possible; in other words, in practically the same condition as when burning has just been concluded. Owing, however, to the very strong affinity which lime has for moisture, and when moist, for carbonic acid (both of which are absorbed from the atmosphere), it is necessary that special facilities be provided to protect lime in storage from the deterioration which would otherwise result. As the atmosphere always carries a certain percentage of moisture, which varies in accordance with climatic conditions, lime exposed to atmosphere undergoes air slacking and although the generation of heat may not be noticeable when the lime lies in the open air or exposed to a circulation of air, this increase in temperature is readily discernible in hot weather combined with high atmospheric humidity. This fact makes it evident that bins as nearly airtight as possible are necessary to prevent deterioration of the stored lime.




Shipment and Storage.—Because of the difficulty of maintaining lime in the same condition as when freshly burned, kiln operators make little or no attempt to store it, their aim being to so adjust supply and demand that they can at once ship it. Carloads usually range from 120 barrels to 200 barrels, although as much as 275 barrels are shipped in the large modern cars, figuring 200 lbs. to the barrel. City dealers in many cases have such demands to supply that often a single shipment in bulk need not be kept more than a day or two, hence no special arrangements need be made for storage. Country dealers whose sales of lime do not warrant the purchase of carload lots, however, are compelled to buy lime packed in barrels, but this means greater cost to the consumer as the barrels, costing from 25 to 35 cents each, are practically a total loss. Necessity for buying in small lots and inability to correctly estimate demands cause excessive loss to the dealer, especially if he overestimates and is compelled to keep the lime in stock for a long period, as then a portion at least is likely to become worthless through air slaking.

Wooden Lime Bins.—Because it is often necessary to store lime for periods varying from one week to possibly a month or more, country dealers frequently provide bins especially designed to exclude the air.


3/8" round rods - 6" ctrs.
1:2:3 concr.
Airtight door
3/8" round rods - 8" ctrs
1/2" round rods - 2'0" ctrs. bent into roof slab as shown
1:2½:4 concrete
Platform
2'0"
6'0"
1:2:3 concr.
Airtight door
Cinders or gravel
End of partition wall
1:2½:4 concr.
1'6"
SECTION
Horizontal rods hooked around vertical rods at ends
For size and spac. of rods see section "A-A"
1-rod straight end
1-rod bent as shown
Alternate
Size and spac. of rods shown in section. All rods bent into end wall as shown.
Airtight Door
2'6" x 0'6" Platform
12'0"
1/2" round rods - 2'0 ctrs. - vertical.
8'0"
Reinforcement of end wall at outer face of wall only. Size and spac. of rods same as shown in section "A-A". Rods bent as shown.
2'9"
SECTIONAL PLAN
3/8" round rods spaced 6" ctrs. 4'6" 2'0"
Reinforcement same in both sides of wall
10'1"
SECTION "A-A"
Regular horizontal reinforcement
1-1/2 round - 5'3" lg.
2'0" Hook
REINFORCEMENT AT DOORS
CONCRETE LIME BIN

As usually constructed, these are about 8 feet wide, 16 feet long and 8 to 10 feet high, with double floors and as a general thing, building paper placed between the floors. Bin walls are sheathed, inside and out, with matched flooring. Building paper and siding are then applied to the exterior although brick walls and sheet metal siding are sometimes used.

To prevent entrance of air through joints of the interior sheathing, it is recommended that diamond-shaped strips be nailed just below each joint, one point of the diamond extending away from and above the joint. This leaves a small triangular space which becomes filled with air-slaked lime and it is said that this results in a joint practically impervious to moisture. In the usual bin construction these diamond-shaped strips are not used, plain battens being employed, or else no attempt is made to seal the joints at all. Bins are ceiled with matched flooring, nailed to the lower edges of the joists and 2 or 3 inches of air-slaked lime is then spread over the upper surface of the ceiling, a small door being left in one of the gables for convenience in placing this material.

Doors.—Cast iron doors of several types are in quite extensive use on the openings used for filling and emptying bins. These generally provide an opening 16 inches square, which at all times should be kept tightly closed. The doors are swung from the top and are held in place by a bar through which a large threaded bolt passes; this, when screwed up, forces the flanges of the door tightly against a rubber gasket, thus preventing the entrance of air. Doors through which filling is done are placed as high as convenient for unloading from cars, those used for emptying the bins being placed at the bin floor level. Sometimes all or a portion of the floor is sloped toward the out-take doors so as to permit more ready removal of the lime.

Although at first thought doors but 16 inches square may seem too small, yet there is good reason for adopting this size. If a large door were used a number of clamps would be needed to keep it tightly closed. The smaller door requires fewer clamps, hence tendency to neglect closing the door tightly is reduced. Experience proves that a laborer speedily acquires the ability to shovel through the small opening without difficulty. Another desirable feature of small doors, especially for out-take purposes, is that they extend such a short distance above the floor that the air contained in the bin from which moisture and carbonic acid have been removed by the lime, will have little opportunity to escape.

In the minds of many dealers there seem to be erroneous ideas as to the causes of lime deterioration, although these should be self-evident. Because stored lime gives most trouble in hot weather, the general impression prevails that the temperature of the atmosphere is responsible. This has resulted in some dealers having installed a vent in the bins, which can be opened for the release of heated air. Others have constructed bins so that currents of air can be passed between the inner and outer walls, the idea being that by this means the temperature in the bin will be kept down. The truth is, however, that there are few airtight bins, and it is probable that the presence of the high moisture content of the air entering the bins, causes the heating. Withdrawal of heated air, therefore, does not remove the cause. It is interesting to note that those dealers who installed vents soon learned how useless they were.

Many builders' supply dealers know there is danger of stored lime causing fire when it is exposed to water, and if there is a possibility of such an event the lime should be stored in concrete or other non-combustible bins. Actual cases have been located where fire started from lime slaking where leaky roofs in bins and box cars permitted the entrance of rain, or where bins were so located as to be subjected to sudden flood water. An instance in line with the last-mentioned case occurred during the latter 80's or early 90's when the town of Bound Brook, New Jersey, was partly destroyed by fire that originated in the lime-storage warehouse of a large lumber yard. Sudden flood waters from a river flowing through the town, entered the lime-storage house where some 200 barrels of lime were stored, resulting in the fire above mentioned. According to Dr. Von Swaatz, a German chemist and author of a treatise on limes and plasters, a temperature of 1,100 degrees Fahrenheit is developed in the sudden slaking of lime.

Insurance Rates.—Insurance rates on builders' supply yards are materially affected when lime-storage bins are associated with the risk. The Western Actuarial Bureau states that if unslaked lime is stored in a frame warehouse or in frame bins close to other buildings of similar construction, 20 per cent is added to the insurance rate. No charge is made if the bin is fireproof and not constructed in connection with a frame building. It is explained that if a fireproof bin is built in a frame structure no allowance would be made for the fireproof character of the bin, due to the fact that no dependence can be placed upon all the lime stored being in this bin.

Concrete Bin Design.—Accompanying these notes is a suggested design for a concrete lime bin which may merit consideration. The foundation should be carried sufficient distance below ground level to secure a firm bearing, which will eliminate danger of appreciable settling from load of contents or heaving resulting from frost action. The floor is shown placed upon a fill of well-tamped cinders or gravel, which raises it above the ground level, thus guaranteeing against the penetration of moisture to the interior of the bin. The floor is sloped toward the front of the bin and the building stands with the longest dimension along the track, so that when filling the bin there need be no trimming, as would be the case if the bin were turned with the end toward the track. The roof is sloped away from the track so that it may conform as nearly as possible to the angle of repose of the lime, thus leaving min-

imum air space to cause slaking. There is also shown a partition wall, both to add strength to the building and also to enable the dealer to keep a portion of his lime entirely protected while using from the other section of his bin. This design contemplates the same amount of reinforcing for all sides of the bin, thus simplifying construction for those unused to work in reinforced concrete.

Costs.—As to the comparative initial costs of frame and concrete construction there probably will be a rather wide difference for the reason that it is easy to obtain the services of a carpenter who can build a frame bin satisfactorily. This is not always the case, however, with reinforced concrete construction and, therefore, the labor cost will be higher than in the case of the frame structure.

It is known that lime in slaking greatly increases in bulk, sometimes exerting tremendous pressure upon bin walls, therefore good grades of lumber must be used in frame bins to insure that they will be even moderately satisfactory.

A concrete bin such as is shown on the drawing, can probably be built for $250, assuming that two 8 by 8-foot compartments would be constructed. Such a bin properly built and operated would be airtight, and thus danger of bursting walls from expanding lime would probably be eliminated. However, careful operation would be essential because the energy of slaking lime has never been measured and there is no accurate data upon which to base all considerations of design.

The economy of a concrete bin would be effected through the avoidance of lime depreciation and that of the building itself, together with insurance reduction.

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Provincial Lime Co., St. John, N. B.; capital, $10,000; incorporator, H. A. Allison.

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Chesapeake Lime & Shell Co., Crisfield, Md., will rebuild plant reported burned at loss of $20,000.

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The White Cliffs Lime Co., Ashdown, Ark., perfected organization for the purpose of manufacturing raw crushed lime at White Cliffs. Work will begin soon on installation of plant. Machinery has been purchased and plant will have daily capacity of 100 tons.

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Announcement has been made of a change in the Coral Ridge Clay Products Co., Louisville, Ky., whereby James T. Howington, who for three months has been sales manager of the company, will on June 1 become general manager, succeeding George H. Fielder, who retires. The new general manager graduated from Vanderbilt University, Nashville, in 1907. He equipped himself as a construction engineer and has been in the contracting business up to this time. Since coming to Louisville Mr. Howington has made many friends in the supply and contracting trades. The Coral Ridge company is very busy and is operating to capacity with its brick and hollow tile lines.

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The local brick plants of Louisville, Ky., are operating full time just now in supplying common brick for building. There is also an excellent demand for tile, drain tile, hollow brick, etc. From the outlook it appears that the majority of the plants will have to work to capacity all summer in supplying the demand.

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William H. Gifford, for years the head of sales of the brick department of the Cleveland Builders' Supply Co., has come to make his home in Chicago, where he will have the management of the brick department of the Wisconsin Lime & Cement Co. In the trade he is known as "Brick" Gifford, because he can't see any other material for building except brick, but does allow small quantities of sand, cement and lime to be used in laying brick. Not only does he advocate brick exteriors of every hue and texture, but he is some enthusiast in the subject of brick interiors. He advocates sideboards and buffets, bookcases and bedsteads built of brick. About the first thing undertaken when he assumed his new quarters in the Chamber of Commerce Building, Chicago, was to order a commodious desk built of brick, laid up with various kinds of bonding to set off the material, and the mortar as well. There is no use in talking, if you interview "Gif" he will "brick" you before he is through with you.

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Dr. E. A. Wolf and Theodore Lanning of Uhrichsville, Ohio, have completed the organization of the Wolf-Lanning Co., which promises to be one of the most aggressive concerns in the Buckeye state. It is building a plant to cost $150,000 near Uhrichsville, where it has a tract of 250 acres of fine clay. This was designed by Engineer C. G. Newton and will have a three-story brick drying house 112x256 feet, and a 1,200 foot side track. The company expects to be operating before June 1.

WILLIAM H. GIFFORD,
Manager Brick Department, Wisconsin Lime and Cement Co., Chicago.

The Fraser Brick Co., of Dallas, recently entered into contracts with the Wichita Falls Brick & Tile Co., of Wichita Falls, Texas, and the Star City Products Co., of Elmendorf, Texas, to take over practically the entire interlocking tile products of the two companies. The Fraser Brick Co. also has a contract with the Seguin Brick & Tile Co., of Seguin, Texas, to take all of its tile output. The plant of the Fraser firm is at Ginger, Tex.

The Bay City Brick & Tile Co., of Bay City, Texas, is enlarging its plant.

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Activities have been resumed in the big brick yards at Menomonie, Wis. The Excelsior Brick Co. began operations with fifty men, and the Wisconsin Red Pressed Brick Co. with a similar number. The Hydraulic-Press Brick Co. has started yards No. 2 and 4. The sheds that were recently burned are being replaced. Satisfactory conditions of the market are reported by all the local manufacturers and a good list of orders have been booked.

# CLAY PRODUCTS

## ACTIVITIES IN THE CLAY FIELD.

The Whitewater Brick & Tile Co., at Whitewater, Wis., has started construction work on its new plant and expects to begin operations by July 1. A stock issue of $50,000 has been disposed of to finance the project.

The Burlington Brick & Tile Co. has started working its clay pits at Burlington, Wis. As a good deal of drainage work will be done in that vicinity, the company expects a busy season in tile work.

Brick and tile from the plant of M. Nisen & Sons plant at Union Grove, Wis., is finding favor among contractors in that section and a very big season is assured.

The Southern Brick & Tile Co., Louisville, Ky., has made a few improvements, including new wiring and lights throughout the plant.

The Milton Pressed Brick Co., Toronto, Ont., capital, $1,500,000. Mr. John S. McConnell, Milton, Ont., is president.

The Castanea Brick works near Renove, Pa., which were shut down for some time, have resumed operations. The company has enough orders ahead to insure its running all summer.

The Peerless Clay Manupfacturing Co., Port Homer, Ohio, is now in operation and is making pipe. It is one of the largest clay industries in the Toronto, Ohio, section.

The Atwell Brick Construction Co., Pittsburgh; capital, $5,000; incorporators, Joseph Atwell and Moses Perry of Pittsburgh, and William Adams of Dormont, a suburb of Pittsburgh.

Business is good at Menominee, Wis. The Commercial Club has appointed a committee to assist in establishing a hollow tile plant. G. A. Perry of Stillwater, Minn., reported the results of tests made with building tile burned from Menomonie clay, showing resistance of 1,035 pounds to the square inch. E. O. Wright, president of the club, and other business men are interested in the proposition.

Cumberland Clay Products Co., Philadelphia, Pa.; capital, $200,000; incorporators, F. R. Hansell, George H. B. Martin and S. C. Seymour.

G. W. Eichelberger & Sons Co., Anniston, Ala.; capital, $30,000; incorporators, C. W., P. M., J. A. and A. L. Eichelberger.

Aycock Wood, Brick, Veneer Co., Aycock, Jackson county, Fla.; capital, $500,000; to manufacture and sell wood and brick; officers, W. E. Aycock, president; A. A. Myers, Jr., vice-president; T. J. Aycock, secretary-treasurer.

The Lonsdale Brick & Pottery Co., Knoxville, Tenn.; capital, $25,000; organized to build a plant at Lonsdale; incorporators, L. D. Morris, A. C. Morris, Henry Hudson, G. Lenland and F. W. Flenniken.

The Paducah Clay Co. has just completed the installation of machinery to increase the output of its clay bank, near Briensburg, Marshall county, Ky. The company has increased its capital stock from $12,000 to $100,000, and its debt limit from $25,000 to $50,000.

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Pittsburgh, May 18.—Brick plants are running along now at a very steady pace. They anticipate a better trade this year than last, particularly in the sale of paving brick. If road jobs, county and state, now under consideration go through it will mean a very much larger total of brick sold than last year. Prices are higher on both building and paving brick.

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W. H. Miller & Sons, Madison, Ind., have put in machinery and have quit making brick by hand. The plant recently started up for the season's run.

# With the QUARRIES

## Don't Overlook Local Profits.

Unless we profit by the examples that have been developed by those who have already achieved the largest measure of success in business we haven't any right to consider ourselves as really truly business men. Analyzing the underlying principle upon which the success of such merchant princes as the late Alexander T. Stewart, of New York, John Wanamaker, of Philadelphia, and the late Marshall Field, of Chicago, we find that primarily two ideas working together produced the results. The first of these was to always have the goods in plentiful supply, and the second was the delivery of the goods promptly and cheerfully at destination.

The rivals and critics of these leaders in the development of modern merchandising used to say forebodingly that the cost of delivering a spool of thread two miles away from the store amounted to more than the total value of the transaction. It thereby created a loss that had to be made up out of the profit on other deliveries in much larger amounts. Since there is no way to make a customer come back to buy the larger bill the loss upon the spool delivery must always stand as a net loss. But the promptness and convenience of the delivery itself was the drawing card that brought the customer back again, and the nearly infinite perfection of the delivery service that these great merchants supplied to their customers attracted more and more customers, until their establishments became world renowned and the efficiency of the delivery systems reduced its cost to a minimum.

Now just what this has to do with the rock crushing business is not at all indefinite, as some may be led to suppose. If Stewart, Wanamaker or Field were to be given the management of a rock crushing establishment, with the knowledge that they would never be allowed to engage in any other business, what do you think any one of those gentlemen would do?

This is worth considering, because every man that runs a rock crusher would like to emulate their success in business. It is really very easy to calculate from the records of their past business operations just exactly what they would and would not do under such a set of circumstances as are familiar to all of us.

First of all, they would continue the operation of the crusher just as they found it. Then beginning with the stripping at the quarry end, studying the drilling and blasting, observing the efficiency of the steam shovel or the loading of the quarry cars, up the incline to the feeding arrangement, and on with the material from the initial crusher, through all of the elevators and screens until it arrived in the bin in proper shape for delivery to the consumer would absorb their attention.

In all of these processes, and in every step of the operation to this point they would find engineers and experts who could take care of the details and develop the efficiencies better than they could ever expect to do such a thing. They would recognize this and give due credit to each one of the men that had created efficiency in the various parts of the producing end, and promptly placing reliance in their ability depend upon them for results. But at the final screen separation, where the various sizes are being led off to the bins or storage piles, as the case may be, the brain of your merchant prince would find the one thing that appeals to him most forcefully. The genius inside of him would be whispering and prompting, "plenty of the goods, made just right, stored and ready for shipment just right." This is the first essential of this business. The handling and reclaiming from storage, the equipping and perfection of it to the minutest detail would receive all of their attention. Then the transportation proposition would be the grand obstacle which Mr. Merchant Prince would have to tackle.

Do you think he would fall down with it, or find it a stumbling block to limit the successful operation of the plant, as so many crusher men have found in the records that are familiar to us all?

Not on your life. He would simply eat it up. That is the kind of food his system enjoys the best. He would no more think of placing his sole dependence upon delivery operations controlled by a railroad board of directors than he would think of running his crusher backwards. The first instinct of a great merchant is to deliver his own goods to the customer for the purchase price.

His very first thought would be, "the service of this operation is not complete unless I can deliver the product to the customers wherever and whenever they want it, at the price quoted in the office or by the salesmen. He would find a way to do just that thing before he would think that they had given any of his individuality to the business in return for his salary.

After all is said and done, the returns all gone over and tabulated, business is business. One kind of business varies from another only with respect to the minor details. It is true that the lack of control of delivery facilities is the main thing that keeps the business of crushing rock from being fully commercialized, and thereby being placed in a position to reap a harvest of profit commensurate with the effort and capital exerted and invested at the already exquisitely developed producing end.

It is vain and entirely beside the question to say, as some are ready to do, "Our railroad service is all that we can expect. Once or twice a day the switch engine comes around and sets in as many empties as we order, pulls out our loads and so leaves us perfectly served with regard to deliveries."

This is true in a few isolated cases, always in connection with the operations of big producers who are more powerful than the railroads themselves, and who for that reason are in a position to command the railroad service. But wherever such service is given by a railroad you can bet somebody else has to suffer, because it is a notorious fact that the railroads of this country are altogether inadequately supplied with motive power, as well as rolling stock, to handle the normal traffic which they have successfully monopolized. This is true, because a majority of the people consider transportation to be too difficult a problem and too large an undertaking for them to antagonize or compete with.

Of course it is easy to say, "We are at the mercy of the railroads, and their favor or disfavor with regard to our operations either makes or breaks us, except for the more or less effective check of the Interstate Commerce Commission and the state traffic authorities. It is true the railroad limits and controls in a way of the success of our enterprise. We have to do business with the railroads, on their terms, at their rates and in accordance with their regulations. When they are in the market for our product we have to supply them with our goods in very large quantities at practically cost prices, without taking any overhead into consideration, which makes really a net loss, if we expect to get any favors from them whatsoever."

Yes, this is the line of least resistance; and, it is the very thing that has worn out a great many excellently built crushers, grinding out immensely valuable material for nothing. Thus crushed rock today is known far and wide and everywhere as the cheapest commodity ever known to man. Yet it is as staple and as indispensable as a food product, and has a very high intrinsic value, because it is a part of the earth's crust itself, which can never be replaced even by nature or successfully substituted for in all the ages that are to come.

Discussing the history of his plant with a man who has been operating for twenty-five years at one place, while we were watching the operation of a new pump that was lifting the last of the water from out of his quarry pit, he chanced to remark, "All of my product has gone to ballast one of the two railroads serving my plant, or into the four city markets reached from here, one of which is twenty-five miles, another sixteen, another eighteen and the other thirty-two miles from the plant. In this particular township we have never sold so much as ten tons, except screenings, which we allow farmer boys to haul away from the pile, yonder, charging them 25 cents a load."

It developed that when a farmer boy came with a one-horse team the price was 25 cents a load. By observation, such a load being paid for at the time, amounted to 800 pounds of screenings. Right alongside another fellow had a full-sized farm wagon box into which he was shoveling a load. From the size of the wagon box his load would be no less than two tons, and the crusher man admitted that he would also pay 25 cents for his load. As these quarters come in a notation is made, "screenings by team, 25 cents," on a memorandum book. In 1915, $130.25 was the amount collected in this way for screenings. The crusher man said it was an average year. Such is practically all of the output of that crushing plant, which for its initial crusher operates a No. 10 McCully, with all the other equipment and paraphernalia to accompany such a machine in producing a capacity of from 1,200 to 1,500 tons per day.

At first glance, any one can see that there is no business about this. Yet that is the way she is conducted, not only at this particular crusher, but at hundreds more who look upon local trade in exactly the same way. Those screenings cost just as much or more to produce as any other part of the product, yet they are treated as a joke. They are a joke when so treated, and that is one reason why in twenty-five long years nothing that resembles business in connection with the sale of those screenings has ever been developed.

Every one of the merchant princes mentioned above sold spools of thread for 5 cents, and quarter yards of ribbon at 2 cents, and buttons for 5 cents a dozen. But first of all in their establishments there was a price and a quantity, which is the first essential of merchandising any material or product. If the crusher man charged 25 cents for 800 pounds of rock, he should charge 50 cents for 1,600 pounds, and 75 cents for 2,400 pounds. The local customers would at once recognize that the material had a price, and would expect to pay according to the quantity that they hauled away. The wholesome respect that the public has for the legal ownership of every manufactured commodity would immediately command respect for the crusher man's product, and incidentally he would multiply by three his income from those very screenings already being sold, for nobody who wants a load of screenings bad enough to come after it and shovel it into a wagon is going to balk at any such price. In fact, no such consumer would balk at a

dollar a ton, especially if it were quoted as 5 cents per hundredweight. A man who can get 100 pounds of any manufactured product for 5 cents is getting it cheap enough, the Lord knows; and every man is convinced of that who will give it a thought.

Upon offering to introduce the crusher man to one of the road commissioners of his own township, we took a machine and called on that very jolly and talkative individual, and learned the following facts:

According to the state and county laws and tax provisions the township normally has $12,000 for road improvements and repairs. The commissioner said, "You know our roads are awful. We simply can't haul road material to our roads, so we invested $350.00 in a portable township crusher about a year ago. We get the farmers to throw the bowlders and field stones over the fence into the right-of-way of the road, and when these accumulate sufficiently we drag the portable crusher out on the road to a suitable place for operation, and collect in the bowlders and field stones with the road teams. We have four men sledging and three men with wheelbarrows feeding the crusher, another man running the traction engine, with a helper. We pay $3.00 per ton for coal and it costs $3.00 more for hauling on the average. We crush up the road material, which is shoveled into the wagons and hauled out to fill up the soft spots. This is about all that we have been able to do with our appropriation since I have been a road commissioner."

It developed that he had been a road commissioner for twelve years. He stated that several years back the entire appropriation had been used for putting in a large number of concrete culverts and four concrete bridges, so as to do away with all of the old temporary structures that had always been dangerous and unsatisfactory. He boasted of the fine condition of the culverts and bridges in his township, and lamented that the great cost of getting even a start with the surface of the road was entirely beyond consideration with the appropriation available.

The commissioner proved to be quite an intelligent man. He had really given a great deal of thought and effort to accomplishing something with the average of $12,000 a year for road improvements in his township. Further inquiry developed that the price of teams has advanced in the last four years from $5.00 for a ten-hour day to $7.50 per ten-hour day, including the wagon, team and driver. Sometimes the commissioners would have as many as twenty teams at work, if they could get them, but usually five or six teams were all that were found available, and the commissioner admitted that some of these were not as efficient as they might be.

Getting down to figures, with the commissioner and by the guidance of the crusher man, having twenty-five years of experience in the business, we found that every ton of crushed rock that went through that portable crusher in 1915 cost $2.75, ready for shoveling into the wagons that hauled it to the road. One dollar per ton was the safest and best figure that could be arrived at for hauling and spreading. Thus $3.75 per ton would represent just about the actual cost of putting a ton of crusher-run rock on the roads of that township. This does not take into consideration the overhead expenses of the township, consisting of the pay of the commissioners, inspectors, surveying and engineering advice, or the superintendent in charge of the working gang.

The commissioner firmly believed that the operation was being conducted just as economically as could possibly be done. He estimated that a macadam road, like some he had seen in other places, would cost at least $10,000 a mile in his township, and based this estimate upon his experience of twelve years.

When asked if he thought that he and the other commissioners of the township would be favorable to a proposition of delivering a ton of rock anywhere in the township that it might be required for $1.50, he replied, "I'm satisfied that if a responsible party were to submit such a proposition that it would be accepted, and the overhead income of the township spent upon such a basis, after the overhead costs were taken out."

The crusher man said he would investigate the matter and see if such a proposition could be made. He was really surprised to know that there was any possibility of developing business for his plant right under the shadow of his tall bins, as it were.

Now, if the genius of a merchant prince had been at that crushing plant twenty-five years ago, there would not now be any such problem as averaging the cost for a one-mile haul and a six-mile haul from the crusher plant to the point of delivery.

A small fleet of auto trucks, with trailers in some cases and in others running with the full load of the truck itself, would not only serve the township at immense profit to the township, making a wonderful record for the commissioners, but also profitably to that crushing operation. Adjoining townships could be served at very slightly advanced costs over that one in which the crusher is located. A very large part of the output of that crusher, possibly all of it, could actually be sold where it is really wanted by customers who will be glad to pay for it, instead of attempting to foist it upon markets already over-supplied, where the margin is very frequently a doubtful quantity as a profit bearing proposition.

Just about half the crushers doing business in this country can develop profitable business of this very kind right under their noses, if they study out the possibilities available to anybody who wants to make use of them. Privately owned transportation facilities, properly figured out and put to work at once will bring the crusher operator into the class of the merchant princes. Charge 50 per cent profit for hauling and it is still cheap enough to attract increasing trade.

When a man is in a position to say to his customer, "So many dollars and so many cents per ton, right where you want it dumped," he is giving efficient service. He is doing business on modern principles. He is going to get a profit, because he is eliminating all of the go-between expenses that are paid first and often leave him with an empty bag to hold.

Without a question the consumption of crushed rock will be doubled the first day that intelligently organized modern delivery equipment is owned and operated by the crusher man so that he can deliver his product. The crusher can't afford to first run after the teamster and dicker with him for the hauling, and hire another man to help unload on arrival, and engineer all of these diverse factors so that they come together at the proper time. It makes an effort on the part of the purchaser, as well as an expense which he is willing to pay somebody to do for him more efficiently than he can ever hope to do it for himself.

This proposition is making good in several places, and it is just as well that all of those who have the opportunity should take the suggestion for what it is worth to apply to their own operations.

## KANSAS CITY CRUSHER PLANTS BUSY.

The Prince-Johnson Limestone Co., of Kansas City, has been getting a nice run of orders, filling in among the larger ones, from the surrounding territory. The company has several crushers on five different railroads at Kansas City, and is therefore able to give quick service. It is selling much chat, and is also finding a good demand for its fertilizer, which is put out in different degrees of fineness.

An amusing instance of the advantage of crushers in different parts of the city was disclosed during the two or three heavy rainstorms recently. For nearly a week there was rain in Kansas City every day, but the Prince-Johnson company lost practically no time. When it was raining at one plant, it was dry at another. The manager of one of the crushers complains, however, that every cloud that threatens Kansas City brings rain to him, while some of the others are comparatively immune.

Palmetto Quarries Co., Columbia, S. C., incorporated with $5.000 capital by Thomas W. Waters and Thos. D. Lott.

## EXTENSIVE CALIFORNIA QUARRY.

The Fresno Fuel Co., of Fresno, Calif., says: "We are sole selling agents for the Piedro quarry, which is located on the Santa Fe rails thirty-one miles from Fresno. This quarry is one of the largest in operation in this state. We have already in the past two years disposed of about 517,000 cubic yards of crushed rock, most of this being used for railroad ballast and highway construction work.

We have just fired a cyote blast in which we had 24,000 pounds of Hercules powder. This blast dislodged approximately 100,000 yards of loose rock. This is the third shot of such character that we have set during the operation of the quarry, the largest of the three being 57,000 pounds of Hercules powder which dislodged 249,000 yards of rock.

We are using one No. 10, two No. 6 and one No. 4 Allis Chalmers crushers. We are using a seventy-ton Bucyrus shovel to load the material into cars. We are transporting this material from the quarry, which is one mile in length and 125 feet high, to the crushers with forty-eight six-yard Western dump cars and three dinky engines."

## INSTALLING LARGER CRUSHER.

St. Paul, Ind., May 18.—The Greeley Stone Co. says: "The stone business this year looks very good through this section. If anything better than last year, but not so good as we have been accustomed prior to 1914. We have plenty to do to start with and expect the usual good run of business. We are somewhat late in getting started this spring as we are putting in a No. 9 McCully crusher to take more of our large stone and expect to get this started in June. In the meantime we are working with our Nos. 7½ and 5 crushers.

## LOUISVILLE QUARRY NEWS.

Louisville, Ky., May 18.—Quarries out through the state are generally busy in supplying material for the big road contracts which have been let throughout most of the counties. It is estimated that more road work will be done this summer than at any previous time in the history of the state.

Road engineer R. P. Franks and a large force of men recently opened a new quarry on Hammond's farm near Elizabethtown, Ky., from which material will be taken for the Dixie highway. The quarry is said to be a good one.

R. L. Worthington, of Crofton, Ky., has opened a new quarry at Earlington, Ky., from which he will supply crushed rock for rebuilding the streets of the city. The machinery is now in operation.

The Standard Rock Products Co., Los Angeles, Cal.; capital, $25,000; incorporators, W. A. Boland, E. J. Longyear and C. M. Jay.

The Wisconsin Granite Co. is making extensive improvements at its plant in Red Granite, Wis., which will greatly increase the output. An air compressor of 800 cubic feet capacity, operated by a 100-horsepower electric motor, has been installed at the quarry. An electric hoist and derrick have been added to the crushing equipment. The company is about to resume activities at its crushing plant at Waupaca. The plant will employ eighty men.

The Twining-Large Co. has recently been granted a charter under the laws of the state of New Jersey as being of Carpenterville, Pa., for the purpose of operating a limestone quarry. The new concern has been capitalized at $10,000, E. P. Griest and G. W. Griest of Lancaster, Pa., and C. J. Smith of Buckingham, Pa., being the principal incorporators.

## Explosives in Quarrying.

By S. R. Russell.

(Paper read before Du Pont Sales Convention, February, 1916.)

There are four general methods of working a face of stone, viz.: benching, snake holing, well drilling, and gopher holing or tunneling.

### Benching Method.

In the bench method the face is worked in one or a series of regular steps or benches, the height of the benches being governed by the thickness of the ledges and the location of the natural seams. Benches may vary from a few feet up to 20′ or more in height but the most common run from 12′ to 16′ high.

In this method of working, percussion drills driven by steam or air and commonly called tripod drills are usually employed. Tripod drills, up to about seven years ago, were in general use in quarries, but are now being rapidly displaced by the Blast Hole Cable Drills where these are adapted. Tripod drilling and benching is best adapted where the face is not high enough to permit or where natural conditions exist which prevent the economical working of a well drill.

Occasionally even in quarries of high face where other conditions are favorable to use a well drill, the chemical content of the stone may vary so much, making it necessary to sort the material, that tripod drilling and short benching are compulsory. This may happen where stone is used for cement manufacture where it must be sorted to get the proper mix or in stone used for fluxing purposes.

In tripod drilling it is necessary to change steels or bits for every two feet of hole drilled. To facilitate drilling and prevent sticking it is customary to drop the gauge at least one-eighth of an inch for every change of steel. So that in drilling a 16-ft. hole for instance, seven changes are made and the finishing bit is seven-eighths of an inch less in diameter than the starting bit. We have then a tapered hole, smaller at the bottom than at the top. As a rule the bottoms are the hardest to pull and from an explosive standpoint these holes are, we might say, upside down and it is often impossible to concentrate enough explosive in the bottom to pull the bench cleanly. For this reason one often has to resort to springing or chambering, if the rock will stand it. If the ground will not stand springing often two or three divergent holes are drilled from one set up of the drill to permit more explosive being used. This of course greatly increases the drilling cost per ton of stone. Oftentimes a customer complains that an explosive is weak and does not pull bottom when perhaps the trouble is that the holes are spaced too far apart or the finishing bit is too small. It is cheaper, as a rule, to spread the gauge of the drills than to jump from a forty per cent to a sixty per cent explosive to gain the same end. Take for example, a case where 16-ft. holes are drilled, starting bit 2″ in diameter. This means a 1⅛″ finishing bit. Chances are 1¼ x 8″ dynamite is used and if so they do not get the powder to bottoms of holes. Assuming, they do, however, it is possible to get only about one pound of dynamite in the bottom two feet of hole. If the starting bit were increased to say 2¾″, the finishing bit would be 1⅞″ diameter and about three pounds of dynamite could be loaded in the bottom two feet. It is evident, then, that this is a question deserving of consideration when selecting an explosive for a piece of work.

In spacing holes a great deal depends on the character of the material, direction of the strata and the purpose for which stone is used. If the stone lies flat a normal spacing for a 16-ft. hole is 8′x8′ in most material with unsprung holes. A 16-ft. hole should be loaded half its depth, at least, with explosive. If stone is pitching and is worked with the pitch the spacing may be increased. The heavier the pitch, the farther back the holes can be set. In a case like this it is usually only necessary to start the stone sliding to clear the bench. In my experience, I have found it best to use a quick and light explosive like extra or straight dynamite rather than a gelatin dynamite, because it is necessary to hit the stone as hard and as quickly as possible to insure maximum breakage before the sliding has commenced. Concentration is not desired but distribution and a dense explosive would be found more expensive than a granular dynamite.

If the stone is worked against the pitch it is evident that the explosive has to lift the stone up and push it over the edge to clear the bench. In this case it may be necessary to spring the holes if possible, or space more closely or resort to divergent drilling. Also probably best results would be obtained by using a dense explosive like gelatin if holes were not sprung. The use to which a stone is put has an important bearing on the explosive question. If stone is used for lime burning it is not desired to break it up too much as spawls are usually wasted in quarries of this kind. Therefore a slower explosive should be used, such as Red Cross Ammonia. If stone is used for cement manufacture or crushed for commercial purposes a quicker explosive should be used or holes spaced so as to obtain maximum breakage in the initial shot. Except in very tough and hard material it will seldom be found necessary to use an explosive of greater strength than 40 per cent. In some of the traps and granites a 60 per cent explosive is necessary. In the bench method of working and tripod drilling a great item of cost is bench cleaning. In winter this is more expensive than in summer. Effort should be made to arrange the spacing of holes and select the proper explosive so that the bench can be cleared on the initial blast. It may be necessary to experiment for a while with different spacings and various explosives in order to arrive at the most economical method to obtain this result. In most quarries where tripod drilling is practiced, the stone is loaded by hand. If so it is necessary to have as much of the stone one man size down in the initial blast as possible. In any case this is always desired, even if a steam shovel is used as it means then maximum efficiency for the shovel.

During the last few years there have been developed smaller, lighter drills of the "jack hammer" and "bull moose" types. These drills are self rotating, easily operated and hollow steel is used for bits. They work best with air but can be operated with steam power. They are very fast drills and 200 feet to 250 feet of hole per day can be made in straight continuous work. The jack hammer weighing less than 50 pounds is used mainly for block holing and secondary drilling but occasionally in bench work. The Bull Moose weighs about 90 pounds and is more adapted for heavier work. Only one man is required to operate either drill.

I know of several quarries where the larger 3¼″ or 3½″ piston driven drills have been replaced by these small drills with a great saving in cost. I also know of a plant where a well drill was abandoned and the bench method and jack hammer drills substituted with much better results. It may be necessary to space holes closer with these drills but they drill so much faster that the drilling cost per ton of stone is much less than with the tripod machine. Smaller steel is used and usually 1″ x 8″ dynamite. They work best in drilling holes up to 8 or 10 feet, but I know of a few places where 16-foot benches are carried. They have also been used to a great extent recently in shaft sinking and tunnel driving with much success.

**(To be continued.)**

### NEW YORK SAND OPERATIONS.

The sand supply of the city of New York is an important feature of the building material industry and the accompanying illustration shows a typical dock, for all of the sand used in the city of New York is brought down the Hudson river in barges and unloaded at docks equipped with derricks having clamshell buckets and hoppers for shooting the material into delivery wagons. Our illustration shows the dock of the Crescent Sand & Gravel Co., located at Thirty-fifth street and East river, and is typical of several other docks maintained by the same company, as well as those of other sand concerns operating within the limits of the greater city. The barges have a capacity of about 2,000 tons of sand and are loaded from sand bars or sand pits by reclaiming machinery consisting of conveyor belts, or industrial railways with self-dumping cars. Tugs drag from three to five barges in a single tow, and each of the unloading docks have equipment sufficient to unload two such barges as that shown in the illustration in a working day of eight hours. In the morning, when the teamsters go to work, there is a string of wagons, several blocks long, nearly half a mile, receiving their first load, each of which requires but one swing of the big grab bucket. It requires less than half a minute from the discharging position of the bucket to the deck of the barge and back again to the discharging position. For mechanical efficiency that developed at the unloading docks of the sand operations of greater New York is very hard to beat.

# SAND and GRAVEL

## THE NEW BIESANZ SCREEN.

You have got to be a specialist now-a-days in handling materials. If the man who has his money invested in gravel pits and sand banks does not apply the greatest number of mechanical appliances his cost is pretty certain not to be in line with what other people are doing.

The Biesanz Stone Company, of Winona, Minnesota, recently, in rebuilding and adding to their equipment to achieve the greatest efficiency in handling the largest amount of material at a nominal cost, got busy

FIG. 1.

with their screening apparatus for greater quantity and better quality of material. Through their mechanical department they have worked out a new screen which not only secures the low cost of operation and practical nominal first cost of installation, but it reduces handling costs, and gives the maximum screening capacity, because the perforations in this screen are smaller the larger the surface is, thus providing the maximum production talked of above. This screen is adaptable for small plants as well as large ones. In a small plant one unit can be used, and all that has to be done is add more units to bring capacity up to any figure.

In handling large quantities of bulky and heavy materials like sand and gravel, each operation and each handling of the output means an additional cost at the loading track. This Biesanz screen has enabled the inventors to not only minimize labor, but it has increased the production as well. The pictures printed on this page will give some idea of the construction and adaptability of the system adopted.

Fig. 1. Small part of the plant, capacity from 200 to 300 yards, located at Winona, Minn., on the Chicago Great Western Railroad. Plant consists of ordinary stiff legged derrick operated with steam hoist and a clam-shell bucket. Sand and gravel is dumped with the clam-shell bucket directly into the hopper at top of bins. From there it is fed into the screen and then the sizes are spouted to the bins. The bins are on rollers and are moved along whenever the derrick is moved. This is a very economical plant for small capacity, only requiring three men to operate it.

Fig. 2. Showing method of loading the Monoghan two-yard drag-line excavator into hopper bottom cars. These cars after being loaded are taken with an industrial locomotive and dumped into a hopper directly over the inclined conveying belt. From this hopper the sand and gravel is fed to the conveying belt by an automatic feeder.

Fig. 3 shows the incline belt taking gravel up to the screens.

Any particular information in which you are interested in connection with this new method of screening sand and gravel will be received with enthusiasm and given prompt attention by the Biesanz Stone Company, Winona, Minn., or at the branch office, 52 Patton Bldg., Milwaukee, Wis.

## BOSTON SAND FIRM DOUBLES OUTPUT.

Boston, Mass., May 18.—The Boston Sand and Gravel Co. is now operating its electrical washer and crusher plant at Scituate, Mass., at double the output of the time of its opening two years ago. The local market at present is estimated at fifty per cent better demand than at the same time a year ago. E. Leroy Lane, manager and assistant treasurer, said the firm is using all of its seven lighters at present in daily deliveries in this territory. Other points along the coast are supplied as well as the two docks maintained in Boston, one at Chelsea and one at the Congress street wharf.

Two years ago, when the Scituate plant was opened, a trench was cut 1,000 feet long through what is known locally as the Third Cliff to Coleman Hill, which is a deposit of approximately 75,000,000 yards of sand and gravel, the deposit being supposedly of glacial origin and composed, according to the showings of test wells, of about fifty per cent gravel and fifty per cent sand. Some idea of the enormous development of the building and concrete industry in this section is observable from the fact that the company has now opened a cross-cut to the main trench and the output now is from 3,000 to 3,500 tons a day. Within the past week the local labor conditions have been met by the granting of

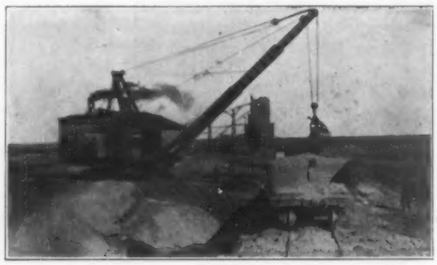


FIG. 2.

increased pay and operations resumed after a short interruption. Increase of the fleet of lighters is now necessary.

## IMPROVEMENT IN SAND MARKET.

Louisville, Ky., May 18.—The sand and gravel business has been looking up somewhat during the past few days and the general outlook is excellent. Street work is very promising and there are several proposed buildings in which a great deal of concrete will be used. The Ohio river is now at an excellent stage for sand digging and most of the companies are busy.

## PITTSBURGH SAND MARKET ACTIVE.

Pittsburgh, Pa., May 17.—Local sand companies are now active on the three rivers, especially the Monongahela and Allegheny. Fine weather and a good stage of water have helped much with their operations. The carload trade is reported good and those concerns which cater to that are doing well, except for the occasional shortage of cars. Up the Mahoning and Shenango valleys there is a record-breaking movement of freight which makes the heavy deliveries of sand into those sections difficult.

## SAND AND GRAVEL INCORPORATIONS.

The Kinzel-Thompson Sand & Gravel Co., Knoxville, Tenn.; capital, $30,000; incorporators and officers, M. E. Thompson, president; W. C. Kinzell, vice-president and manager; Frank Adney, secretary. The company has placed contracts with W. J. Savage Co., Knoxville, for equipping the sand and gravel plant.

Bull & Wilbur, Inc., Otisville, N. Y.; sand, gravel, brick, stone, lumber, cement; capital, $30,000; incorporators F. H. Finn, J. L. Wilbur, G. R. Bull, Bloomingburg.

Evansville Sand and Gravel Co., of Evansville, Ind., has increased its capital stock from $25,000 to $50,000.

The Holmes Sand & Gravel Co., Millersberg, Ohio, capital, $25,000; incorporators, John W. Fenton, W. F. Lohaas, B. W. Osborne, Wayne Stilwell and Charles Lohaas.

The Wiggin Crushed Stone & Sand Co., of Dayton, Ohio, has filed amended articles of incorporation increasing its capital stock from $65,000 to $200,000, to finance the necessary expansion of its equipment and facilities.

The Squaw Island Sand Co., of Buffalo, N. Y., which has leased the dock and adjacent property along the Niagara river, formerly used by McLean Bros., lumber dealers, has commenced the erection of the apparatus which it will operate in connection with the big sand yard which it plans to open on June 1.

Richard Fowler withdrew from the Newman Sand Co., Louisville, Ky., a short time ago and the entire business is now conducted by Charles Newman. The company does principally a teaming business, buying and selling sand which is dug by the larger companies.

The E. T. Slider Co. has just installed two General trucks, made by the General Motors Co. One truck has been put in service at the New Albany, Ind., plant and the other at the Louisville plant, but they will be transferred to whatever yard happens to be the busiest.

The Springfield Sand & Gravel Co. has been incorporated at Springfield, Ore.

FIG. 3.

# SIDE TALK

### GOODRICH TIRES ARE POPULAR.

The power of "silent salesmanship," which is advertising, was never more forcibly felt than when The B. F. Goodrich Co. last year announced "fair list" prices on tires and then set a new fashion in tires when they first announced the Goodrich black tread tires. In both cases, other tire manufacturers changed their tire prices and the color of their treads so as to take advantage of the popularity and demand made by Goodrich advertising and publicity. Today black tread tires have the "call" everywhere.

Another reason why black treads are so popular is because of the wonderful endurance of "Silvertown" tires in races and on the roads everywhere during the last two years. Black treads were originated by Goodrich on "Silvertown" tires.

The black "Barefoot" rubber used in Goodrich tires clings to the pavement, for the same reason that the sole of your bare foot clings to slippery surfaces.

When the clutch of your car is thrown in, and the wheels begin to turn, with first sudden tug on tires, the barefoot rubber stretches between the outer surface contacting with the ground and its inner surface which is cemented to the cotton fabric.

That wonderful stretchy quality thus forms a sort of "spring" which heavily reduces the "grind," the frictional heat, and wear between tire and pavement, which is death to tires. It also eases the strain on the rubber adhesive between the several layers of fabric, through bringing the sudden tug of starting under power and stopping under brakes, to bear on it gradually (as with a spring). It further takes up much of that traction-wave which, in running, tends to separate the several layers of cotton fabric with which tires are interiorly built up.

Goodrich tires thus give their maximum traction with minimum friction. And this in turn, results in maximum mileage from every ounce of material used.

### A Few Facts About Chain Belt Co.

The Chain Belt Co., located on the south side in the city of Milwaukee, is one of the few manufacturing companies that can lay claim to the distinction that some product of its manufacture can be used in every manufacturing industry. As manufacturers of elevating, conveying, power transmitting and concrete machinery the demands of the trade have been such that from a small beginning, the Chain Belt Co. takes a leading rank in the world in this line of manufacture.

The Chain Belt Co. first made history for itself nearly a quarter of a century ago. In 1891 the company began its existence as manufacturers of "Detachable chain belt," which was and is still used on agricultural implements. These efforts met with almost immediate success and it was but a few years until the capacity of the plant was insufficient to meet the requirements of the incoming business.

A new plant was then erected on part of the ground where the present day plant now stands, and in addition to this, the plant now consists of a malleable iron foundry, a grey iron foundry, a structural steel shop, a concrete mixer shop, a machine shop, wood and metal pattern shop, a building nearly a city block in length devoted to the tumbling, grinding, assembling and testing of chain belt and the main office.

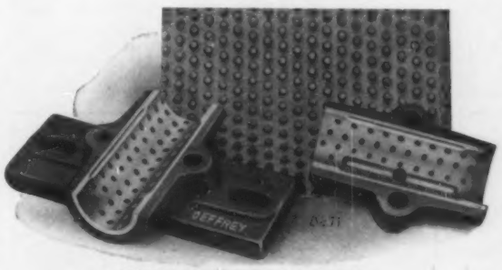
The growing demand for a chain belt stronger and more durable, by different manufacturers who were finding new uses for chain belt for driving and elevating purposes, led the Chain Belt Co. to invent and patent their famous type of "Griplock" chain belt. The chain belt derives its name from the "Griplock" feature of interlocking the side bars with the barrel forming a dirt proof joint.

Within the past eight years, steel chain belt has come into use and the Chain Belt Co. has sold thousands of feet of their all-steel "Chabelco" roller chain belt. In this chain belt, the side bars are stamped from mild steel bar stock, the rollers are turned from cold rolled shafting and the pins and bushings are of steel and case hardened.

There are three different types of chain belt, namely, "Detachable," "Griplock," and "Chabelco," and these are used for the following purposes: on all kinds of agricultural machinery, for canning plants, saw mills, lime and cement plants, packing houses, pulp and paper mills, ice houses, tanneries, breweries, oil wells, power plants, fertilizing plants, sand and gravel plants, mining industries, glass plants and potteries and on elevating, conveying and concrete machinery. The numerous uses for these various types of chain belt has necessitated the service of a large engineering department for correctly constructing and installing the elevating and conveying machinery with which "Griplock" and "Chabelco" chain belts are used.

To give an approximate idea of what amount of chain belt has been manufactured during the past twenty-three years, the chain belt, if laid in a straight line, would reach from New York to San Francisco and back again. This amounts to over thirty million feet.

To further keep up with the needs of its customers, the Chain Belt Co. began manufacturing a line of transmission machinery, including shaft hangers, safety set collars, couplings, pillow blocks, spur, mitre, worm and bevel gears and journal boxes.




TYPICAL JEFFREY BEARINGS.

Seven years ago the concrete mixer industry brought another use of chain belt and it was then that the Chain Belt Co. began the manufacture of the "Chain Belt" mixer, the "Mixer with the Bulge," to be followed three years later with the "Chain Belt" pavers for mixing concrete for streets and roads. Most of the concrete roads in and about Milwaukee have been laid by "Chain Belt" pavers and there are now in use in Milwaukee fifty "Chain Belt" mixers and pavers. One of the notable buildings which the "Chain Belt" mixer helped to construct is the fifty-five-story Woolworth Building in New York City, the mixers mixing the concrete for the foundations. A severe test as to the durability and efficiency of "Chain Belt" mixers was the Manhattan End of the Catskill Aqueduct, twelve large "Chain Belt" mixers working night and day to complete this work.

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The American Road Machinery Co., Kennett Square, Pa., have issued a well illustrated catalog and booklet concerning their champion steel rock crushers, with the special elevators, screens, conveyors, winding drums, dump cars, etc., which go to make the complete equipment of rock crushing plants. The catalog contains much valuable information, not only with regard to the machines illustrated in the very carefully made halftones, but a lot of valuable information relating to the subject of crushing rock in both coarse and fine sizes. The booklet and its contents are worth the careful perusal of every man who operates a crusher to get some up-to-date suggestions.

### BEARINGS THAT INSURE LONGER LIFE—INCREASED OPERATING EFFICIENCY AND ECONOMY.

Users of transmission machinery will be interested to know that the Jeffrey Manufacturing Company of Columbus, Ohio, the well known manufacturers of power transmission, elevating, conveying, screening and crushing machinery, are now furnishing their standard bearings with the famous Randall graphite sheet lubricator, which is rapidly being adopted by manufacturers and managers of industrial plants in all lines of business, with most excellent results.

All men who are familiar with bearing troubles, as well as the highest engineering and mechanical authorities, concede that graphite is the best existing lubricant, but up to the present time the difficulty has been to combine graphite and babbitt metal.

This problem, however, has now been solved to the satisfaction of the most exacting, by a simple patented mechanical device consisting of solidified pure graphite cones, slightly tapered and attached by hydraulic pressure to a fine copper wire screen or fabric. The babbit metal is poured in the usual way and sets aroun dthe cones, making them part of the bearing, which is thus made practically self-lubricating, and eliminating all friction. The experience of many users is that not a single hot box has ever occurred where the Randall graphite sheet lubricator has been properly installed.

The use of oil with Jeffrey bearings may be, and often is, entirely eliminated. In no case does it amount to more than 10 to 25% of the usual consumption of oil or greases—a saving that would run into large figures in any shop or factory having a considerable equipment of machinery.

This lubricating device will enable Jeffrey babbitted bearings to stand up under heavy pressure and high speeds without heating, assuring an appreciable increase in operating efficiency with a substantial saving in operating cost.

In addition to the economics of oil, babbitt metal, time and labor, the slight amount of oil required for bearings so equipped overcomes all oil-soaking in the belt, and the saturating of the machinery with oil is also avoided.

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The Ricketson Mineral Paint Works, Milwaukee, Wis., have a little folder that is made to imitate a fiery red brick which says a good many useful things, short, direct and to the point. The matter of using water colors is one that is often done very carelessly, and this little booklet contains directions for mixing red brick colors as well as brown, chocolate, buff, purple, black and other colors, explaining how to handle the lime and the cement so that satisfactory results can be obtained. There is no excuse for workmen producing bum results in these days when the coloring materials are carefully produced just right, and the information is printed so clearly that any man who can read can follow the directions. All of those who work with their heads as well as their hands in the matter of using mortar colors are not only satisfied but delighted with the results obtained.


## Too Late to Classify

FOR SALE—Drag line 1,000 yd. capacity; 20 ton standard gauge locomotive; 2 large centrifugal pumps, large drier, No. 4 Ransome mixer, 60 ft. American boom derrick, No. 2 Gates crusher, 1 yd. O. & S. clam. A. V. Konsberg, 226 S. LaSalle St., Chicago.

**FOR SALE—At a Bargain**

One No. 00 Raymond Impact Pulverizer.
One No. 12 Smidth Tube Mill.

**NATIONAL RETARDER CO.**
930 N. Halsted Street Chicago, Illinois

The market place of the building material industry. Employment department, machinery wanted and for sale, etc. If your wants are not answered in this page, write a letter to this office.

THE FRANCIS PUBLISHING CO.
537 S. Dearborn Street Chicago, Illinois

# :: THE :: BOURSE

Advertisements will be inserted in this section at the following rates:

For one insertion.....25 cents a line
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For three insertions.....60 cents a line

Eight words of ordinary length make one line. Heading counts as two lines.
No display except the headings can be admitted.

Remittances should accompany the order. No extra charges for copy of paper containing the advertisement.

## EMPLOYEES WANTED

WANTED—General Foreman for limestone quarry and crushing plant in Ohio. Must be good organizer and capable of handling foreign and American labor. Apply at once, stating experience, reference and salary expected. Address BOX 1125, care ROCK PRODUCTS AND BUILDING MATERIALS.

WANTED—Quarry Foreman in a large limestone quarry connected with lime plant, in Pennsylvania. State experience and reference. Address Box 1116, care ROCK PRODUCTS AND BUILDING MATERIALS.

## EMPLOYMENT WANTED

WANTED—Position as Superintendent or Manager lime and stone properties. Fifteen years' experience designing, building, operating, lime, hydrate lime, stone-crushing plants, opening, operating stone quarries. Address BOX 1123, care ROCK PRODUCTS AND BUILDING MATERIALS.

WANTED—Position as cement salesman. Have had 15 years' experience in cement. New York State preferred. Address Box 111, care ROCK PRODUCTS AND BUILDING MATERIALS.

## PLANTS FOR SALE

**FOR SALE—AN OPPORTUNITY.**

The complete factory of the SCHENECTADY BRICK COMPANY, manufacturing sand lime brick, must be sold at once. Machinery, all of the most approved and practical, in fine condition. Situated alongside of railroad. Ten acres of land, with sand of finest grade.
For terms and particulars inquire of JOHN ALLEN, 139 Jay Street, Schenectady, N. Y.

**"RAILS"**

All sections of new and relay rails in first-class condition. Splice Bars, Frogs, Switches and Spikes also carried in stock. We purchase abandoned plants and cheerfully quote prices on any material that you may have to dispose of.

M. K. FRANK, Frick Bldg., Pittsburgh, Pa.

SOLD TO DEALERS ONLY

We offer THE DEALER
**CALVERT MORTAR COLORS**
For Their True Worth
to the owner, the builder and himself
*by the only makers*
CALVERT MORTAR COLOR WORKS
Dept. R, Warner & Wooster Sts., BALTIMORE, MD.

**Anchor Brand Colors**

For Mortar, Cement and Brick
Brown, Black, Red and Buff
Strongest and Most Durable

Manufactured by **C. K. Williams & Co.**
Correspondence Solicited Easton, Pa., U. S. A.

FOR SALE—Plant of the Green Mountain Lime Company at New Haven, Vermont. Capacity, 300 barrels per day with present equipment which is inadequate to supply the demand for the Company's product. Great opportunity to add an Agricultural Lime Plant which will sell all the by-products at good profit. The Company has the largest chemical lime trade in New England.
GREEN MOUNTAIN LIME COMPANY, RECEIVERS,
No. 12 Main Street, Middlebury, Vermont.

LIME MANUFACTURING PLANT

LIME MANUFACTURING PLANT, on trunk line midway between Jacksonville and Tampa, Florida. Best of freight rates. Substantial business already acquired in building, sanitary, fertilizer and paving stone lime. Address John M. Graham, Ocala, Fla.

## MACHINERY WANTED

Wanted to buy, one or two sixty inch by fifteen or twenty foot revolving screens. Advise condition, best price and location. Address The Casparis Stone Company, Columbus, Ohio.

## BUSINESS OPPORTUNITIES

CAPITAL WANTED—A fine limestone property in western New England offers exceptional chance in ground limestone and high calcium finishing lime. ROCKDALE LIME CO., 134 West St., Pittsfield, Mass.

**See the WINGS**

MARVEL Coal Chutes are the only ones that protect both the foundation and siding. Made of heavy boiler plate and cast iron. Prices right. A reliable chute worthy of your confidence and use. Learn the valuable features of the MARVEL

Mr. Material Man: If you are early enough you can have the exclusive agency in your city, and our prices are right. And the individuality of the Marvel Chute makes it easy to sell.

Write for leaflet "R" and prices

INTERSTATE MFG. CO., Oskaloosa, Ia.

*Stained with Cabot's Shingle Stains and lined with Cabot's Sheathing Quilt. Robert W. Spencer, Jr., Architect, Chicago.*

**Cabot's Building Specialties**

Creosote Stains or Shingles, Siding, Clapboards, Trimming Boards, and all other Exterior Woodwork.
Waterproof Cement and Brick Stains for waterproofing and artistically coloring cement and brick buildings.
"Quilt" for lining houses to keep out cold or heat, for sound-deadening in floors and partitions, and for insulating cold storage and refrigerators.
Conserve Wood Preservative for preserving Posts, Planks, Sills and all other exposed timbers. Mortar Colors, Protective Paints and Metals, Waterproofing Compounds, etc.

SAMUEL CABOT, Inc., Mfg. Chemists
BOSTON, MASS., U. S. A.
1133 Broadway, New York 24 West Kinzie St., Chicago

GYPSUM LAND
**FOR SALE.**

In the heart of the gypsum industry in Webster County, Iowa, 240 acres of choice gypsum land located on the Chicago & Great Western R. R. one mile from Fort Dodge, can be bought for $300 per acre. For particulars write M. J. HAIRE, Fort Dodge, Iowa.

## MACHINERY FOR SALE

**FOR SALE.**

4—No. 66 F. L. Schmidt & Co. Kominuters.
1—No. 18 Davidson Tube Mill.
All in good condition.
Will sacrifice for prompt sale.
M. Braudy & Sons, Grand Rapids, Mich.

**FOR SALE.**

One 60-ton Bucyrus Steam Shovel.
One small tripod Drill.
THE HIGGINS STONE CO., Bellevue, Ohio.

**THE BEAL CORE DRILL.**

The best, cheapest and most effective for testing all kinds of rock and mineral lands. Core taken out 3 and 4 inches in diameter. Estimates furnished. EDW. S. BEAL, 214 Woodlawn Ave., Lansing, Mich.

SLIGHTLY USED ENGINE (25 H. P.) Elevator and Pulverizer for sale. Used only four months. Will close out at a bargain. BOX 1124, care ROCK PRODUCTS AND BUILDING MATERIALS.

Continued on page 49.

**Paper Bags of Quality.**
For All Purposes
The Jaite Company
Boston, Ohio
Strongest, Most Pliable

# *"Winners"*

Thousands of the country's leaders in concrete work have said, "Send me the Concrete Dope Book."

They know that the makers of WINNER MIXERS would not advertise it as a valuable book if it did not contain just the sort of concentrated information and data that the man of concrete affairs needs.

You will find the Concrete Dope Book different, just as you will find Winner Mixers different. Sound, common sense fills the pages of the Dope Book, and sound, mechanical construction and merit is built into Winner Mixers.

You need them both—but be sure and get the Dope Book—It's Free—and then we will talk about Winner Mixers later.

**The Cement Tile Machinery Co.**
457 Rath Street Waterloo, Iowa

I want the "Dope Book"

Name .....
Address .....
.....

FOR SALE—Sullivan Steam Drill, steels up to twelve feet, in good condition. Gasoline engine, 6 H. P., water-cooled. Two long-distance telephones. Address Box 1120, care ROCK PRODUCTS AND BUILDING MATERIALS.

FOR SALE—Two No. 36 American Ring Hammer Pulverizers; run only a short time. Address L. L. Stephenson, Lovick, Ala.

FOR SALE—Second-hand 50-H. P. Boiler and 35-H. P. Engine. Good working order. Write MAYVILLE WHITE LIME WORKS, Mayville, Wis.


## QUARRYMEN

We have many bargains in high-grade "used" Steam Shovels, Locomotives, Cars, Cranes, Cableways, Crushers, Air Compressors, Hoists, etc. What do you need?

**WM. B. GRIMSHAW COMPANY**
693 Drexel Building Philadelphia, Pa.

## FOR SALE

CRUSHERS, LOCOMOTIVES, CARS, STEAM SHOVELS, ETC.

**C. G. A. SCHMIDT, Jr.**
639 Land Title Bldg. Philadelphia, Pa.

## WANTED

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# *Index to Advertisements*

MAY 22, 1916


Allis-Chalmers Mfg. Co. ..... 7
Ambursen Co. ..... 16
American Clay Machine Co. ..... 50
American Clay Co. .....
American Process Co. ..... 18
American Pulverizer Co. ..... 8
American Steel & Wire Co. ..... 50
Asphalt Ready Roofing Co. ...
Atlas Car & Mfg. Co. ..... 60
Atlas Portland Cement Co. ..... 60
Austin Mfg. Co. ..... 9

Bacon, C. Earle. ..... 7
Ball Engine Co. ..... 13
Bartlett, The C. O. & Snow Co. 8
Bates Valve Bag Co. ..... 58
Belden Brick Co. .....
Best Bros. Keene's Cement Co.
Books for the Trade ..... 49
Bourse, The ..... 47-48
Bradley Pulv. Co. ..... 5
Butterworth & Lowe ..... 9
Byers Mach. Co., John F. ..... 15

Cable Excavator Co., The ..... 54
Cabot, Samuel, Inc. ..... 48
Caldwell, H. W., & Son Co. ..... 55
Calvert Mortar Color Works .. 48
Cardiff Gypsum Plaster Co. ....
Carolina Portland Cement Co. 57
Cement Tile Machy. Co. ..... 48
Ceresit Waterproofing Co. ..... 53
Chalmers & Williams ..... 9
Chattanooga Paint Co. ..... 55
Chicago Portland Cement Co.
Clayton Air Compressor Wks.
Classified Business Directory. 56
Cleveland Builders' Supply Co.

Clinchfield Portland Cement Corp. ..... 2
Clinton Metallic Paint Co. ..... 54
Coplay Cement Mfg. Co. ..... .
Crane, P. D., Co. .....

Dull & Co., Raymond W. ..... 14
Dunning, W. D. ..... 60
Dupont de Nemours & Co. ....

Ehrsam, J. B., & Sons Mfg. Co. 6

Farrell Fdy. & Mchy. Co. ..... 7
Fate Co., J. D. ..... 10
Federal Motor Truck Co. ..... 59
Frank, M. K. ..... 48
Fuller Eng. Co. ..... 54

General Fireproofing Co. ..... 31
Glutrin Paving Co. ..... 58
Goodrich, B. F., Co. .....
Gordon-Hittl Co. ..... 51
Grimshaw Co., Wm. B. ..... 49

Haiss, Geo., Mfg. Co. ..... 13
Harsh, Earl C. ..... 54
Hendricks Mfg. Co. ..... 53
Hunt, Robert W., & Co. ..... 54
Huron, Wyandotte Portland Cement Co. ..... 2

Imperial Belting Co. ..... 32
Improved Equipment Co. ..... 54

Indianapolis Cable Excavator Co. ..... 13
International Steam Pump Co. 11
Interstate Mfg. Co. ..... 48

Jaeger Mach. Co. ..... 50
Jaite Co., The ..... 48
Jeffrey Mfg. Co. ..... 10
Johnston & Chapman Co. ..... 4

K.-B. Pulverizer Co., Inc. ..... 9
Kelley Island Lime & Trans. Co. ..... 53
Kent Mill Co. ..... 4
Kritzer Company, The ..... 12

Lakewood Eng. Co., The ..... 3
Lehigh Car Wheel & Axle Wks. 7
Lehigh Portland Cement Co. . 18
Leschen, A., & Sons Rope Co. . 20
Lewistown Fdy. & Mch. Co. .. 8
Link Belt Co. ..... 32
Loomis Machine Co. ..... 51

McLanahan Stone Mch. Co. ... 7
McMyler Interstate Co. ..... 14
Marquette Cement Mfg. Co. ... 55
Metropolitan Paving Brick Co.
Midland Crusher & Pulveriser Co. ..... 30

Miscampbell, H. ..... 13
Mitchell Lime Co. ..... 53
Moores Lime Co. ..... 51

National Lime & Stone Co. ..... 52
National Mortar & Sup. Co. ... 52
National Retarder Co. ..... 50
New York Rubber Co. ..... 29
North Western States Portland Cement Co. ..... 55

Ohio & Western Lime Co. ..... 52
Ohio Locomotive Crane Co. ... 14
Osgood Co., The ..... 15

Pennsylvania Crusher Co. ..... 2
Pierce Arrow Motor Car Co. . 17
Plymouth Clay Products Co. ..
Plymouth Gypsum Co., The .. 55
Power & Mining Mach. Co. ....

Raymond Bros. Impact. Pulv. Co., The ..... 5
Revere Rubber Co. ..... 2
Reynolds Asphalt Shingle Co. .
Ricketson Mineral P. Wks. ... 51
Ruggles-Coles Eng. Co. ..... 2

Sanderson-Cyclone Drill Co. ... 58
Sandusky Cem. Co. ..... 18
Sauerman Bros. ..... 15
Schaffer Engineering & Equipment Co., The ..... 51
Schmidt, Jr., C. A. G. ..... 49
Scioto Lime & Stone Co. ..... 52
Smidth, F. L., & Co. ..... 54
Steacy-Schmidt Mfg. Co. ..... 13
Stedman's Fdy. & Mach. Wks. 8
Stephens-Adamson Mfg. Co. ... 31
Sturtevant Mill Co. ..... 11
Sykes Metal Lath & Roofing Co. ..... 54

Toch Brothers. ..... 57
Toepfer, W., & Sons. ..... 12
Traylor Eng. & Mfg. Co. ..... 10
Trussed Concrete Steel Co. ... 29
Trus-Con Laboratories. .....

U. S. Gypsum Co. .....
Utica Hydraulic Cement Co. . 57

Vigo-American Clay Co. .....

Webb City & Carterville Fdy. & Mch. Co. ..... 10
Webster Mfg. Co. ..... 59
Weller Mfg. Co. ..... 16
Wheeling Wall Plaster Co. ....
White Co., The ..... .
Whitehall Cement Mfg. Co. ... 55
Williams, C. K. ..... 48
Williams Patent Crusher & Pulverizer Co. ..... 8
Wolverine Portland Cement Co. 57
Worthington Pump and Machinery Corp. ..... 11

Yates, Preston K. ..... 54

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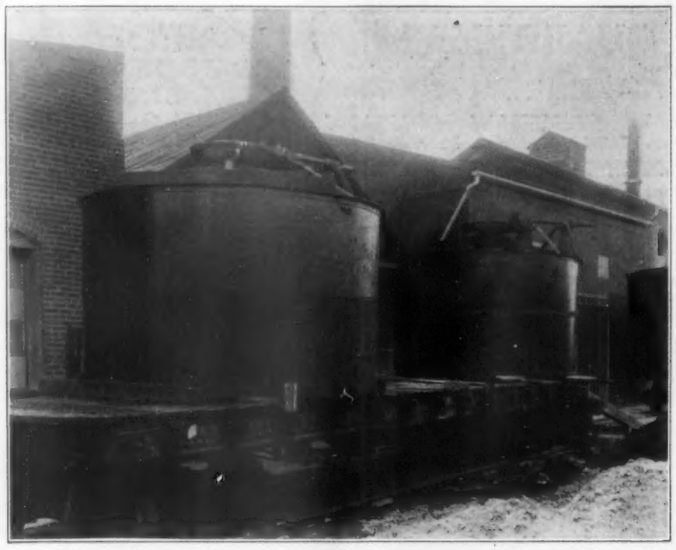

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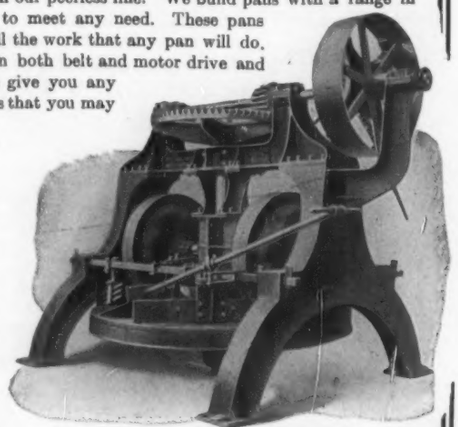

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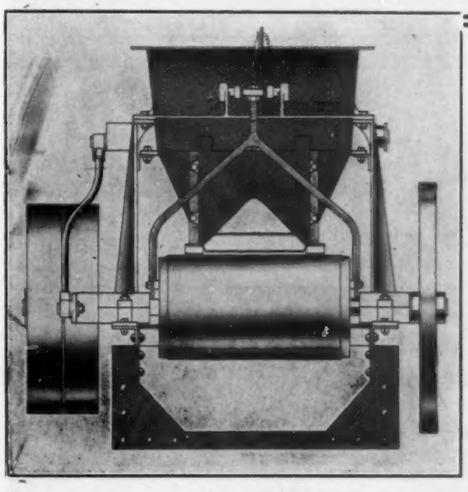

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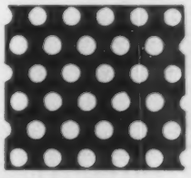

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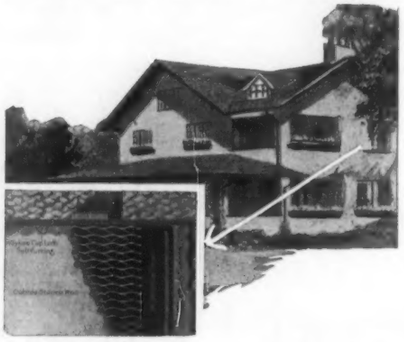

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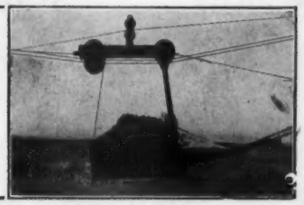

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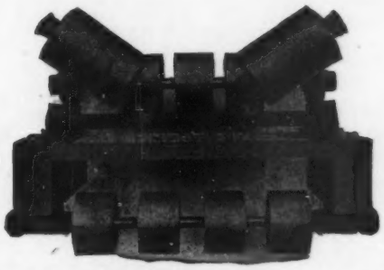

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### BAGS AND BAG MACH'Y.
Bates Valve Bag Co.
**Fosterhill Mfg. Co. (bag tyers).**
**Jaite Company, The.**

### BELTING.
**H. W. Caldwell & Co.**
**Dull & Co., R. W.**
**Goodrich Co., B. F.**
**Imperial Belting Co.**
**Link Belt Co.**
New York Rubber Co.
**Revere Rubber Co.**
**Webster Mfg. Company.**
**Weller Mfg. Co.**

### BRICK.
**Metropolitan Paving Brick Co.**

### BRICK CLAMPS.
**The P. D. Crane Co.**

### BRICK PAVING.
**Metropolitan Paving Brick Co.**

### BUCKETS, DUMPING AND GRAB.
**Atlas Car & Mfg. Co.**
**H. W. Caldwell & Co.**
**Haiss Mfg. Co., Inc., Geo.**
**Hendrick Mfg. Co.**
**Lakewood Engineering Co.**
**Link Belt Co.**
**McMyler-Interstate Co.**

### CABLES.
**American Steel & Wire Co.**
**Dull & Co., R. W.**
Leschen & Sons Rope Co.
**Bauerman Bros.**

### CALCINING MACHINERY.
**Atlas Car & Mfg. Co.**

### CARS, INDUSTRIAL.
**Atlas Car & Mfg. Co.**
**Austin Mfg. Co.**
**Haiss Mfg. Co., Inc., Geo.**
**Lakewood Engineering Co.**
**Link Belt Co.**
**Stephens-Adamson Mfg. Co.**
**Weller Mfg. Co.**

### CASTINGS.
**Allis-Chalmers Mfg. Co.**
**Traylor Eng. & Mfg. Co.**

### CEMENT, CAEN STONE.
**Cleveland Bldrs.' Supply Co.**

### CEMENT, HYDRAULIC.
**Carolina Portland Cement Co.**
Utica Hydraulic Cement Co.

### CEMENT, PORTLAND.
**Atlas Portland Cement Co.**
**Carolina Portland Cement Co.**
**Chicago Portland Cement Co.**
Cliachfield Portland Cement Corp.
**Coplay Cement Mfg. Co.**
**Huron-Wyandotte Port. Cement Co.**
**Lehigh Portland Cement Co.**
**Marquette Cement Mfg. Co.**
**Northwestern States Portland Cement Co.**
**Ohio & Western Lime Co.**
Sandusky Cement Co.
**Whitehall Portland Cement Mfg. Co.**
Wolverine Port. Cement Co.

### CHAINS.
**Jeffrey Mfg. Co.**
**Link Belt Co.**

### CLAYWORKING MCHY.
**American Clay Mchy. Co.**
**Bartlett, C. O., & Snow Co.**

### COLORINGS DRY AND MORTAR.
**Samuel Cabot.**
Calvert Mortar Color Wks.
**Chattanooga Paint Co.**
**Ricketson Mineral Paint Works.**
**Williams, C. K., & Co.**

### COMPRESSORS.
**Allis-Chalmers Mfg. Co.**
**Clayton Air Compressor Co.**
International Steam Pump Co.

### CONCRETE MIXERS.
Cement Tile Mach. Co.
Jaeger Machine Co.
**Lakewood Engineering Co.**
**Miscampbell, H.**
**Power & Mining Mach. Co.**

### CONCRETE REINFORCEMENT.
**American Steel & Wire Co.**

### CONSULTING GEOLOGISTS.
Hunt, Robt. W., & Co.

### CORNER BEADS.
**Sykes Metal Lath & Roofing Co.**

### CRANES—LOCOMOTIVE AND GANTRY.
Byers Mach. Co., John F.
**Link Belt Co.**
McMyler-Interstate Co.
Ohio Locomotive Crane Co.

### CONVEYORS AND ELEVATORS.
**Allis-Chalmers Manufacturing Co.**
Atlas Car & Mfg. Co.
**Austin Mfg. Co.**
**Bartlett, C. O., & Snow Co.**
**Caldwell, H. W. & Sons Co.**
Dull, Raymond W., & Co.
**Ehrsam, J. B., & Sons Mfg. Co.**
**Haiss Mfg. Co., Inc., Geo.**
**Jeffrey Manufacturing Co.**
**Link Belt Co.**
**McMyler-Interstate Co.**
**McLanahan Stone Machine Co.**
**Power & Mining Mach. Co.**
**Stephens-Adamson Mfg. Co.**
**Toepfer, W., & Sons.**
**Webster Mfg. Company.**
**Weller Mfg. Co.**

### CRUSHERS AND PULVERIZERS.
**Allis-Chalmers Manufacturing Co.**
**American Pulverizer Co.**
**Austin Mfg. Co.**
**Bacon, Earl C.**
**Bartlett, C. O., & Snow Co.**
**Bradley Pulverizer Co.**
**Butterworth & Lowe.**
**Chalmers & Williams.**
**Ehrsam, J. B., & Sons Mfg. Co.**
**Jeffrey Manufacturing Co.**
**K.-B. Pulveriser Co.**
**Kent Mill Co.**
**Lehigh Car, Wheel & Axle Co.**
**Lewistown Foundry & Machine Co.**
**McLanahan Stone Machine Co.**
**Midland Crusher-Pulverizer Co.**
**Pennsylvania Crusher Co.**
**Raymond Impact Pulverizer Co.**
**Stedman's Fdy. & Mach. Wks.**
**Sturtevant Mill Co.**
**Traylor Eng. & Mfg. Co.**
**Webb City & Carterville F. & M. Wks.**
**Williams Pat. Crusher & Pulverizer Co.**
Worthington Pump & Mach. Corp.

### CULVERT FORMS.
Shulz & Hodgson.

### DRAIN TILE.
**American Clay Co.**
**Vigo-American Clay Co.**

### DREDGES
**Osgood Co., The.**

### DRILLS.
**Jeffrey Mfg. Co.**
**Loomis Machine Co.**
**Sanderson-Cyclone Drill Co.**

### DRYERS.
**American Process Co.**
**Bartlett, C. O., & Snow Co.**
**Link Belt Co.**
**Ruggles-Coles Eng. Co.**

### ENGINEERS.
**American Process Co.**
**Bacon, Earl C.**
**Dull, Raymond W., & Co.**
**Fuller Engineering Co.**
**Harsh, Earl C.**
**Hunt, Robt. W., & Co.**
**Improved Equipment Co.**
**Sauerman Bros.**
**Schaffer Eng. & Equip. Co.**
**Smidth & Co., F. L.**
**Stephens-Adamson Mfg. Co.**
**Traylor Eng. & Mfg. Co.**
**Yates, P. K.**

### ENGINES.
**Allis-Chalmers Mfg. Co.**
**Power & Mining Mach. Co.**

### EXCAVATORS.
**Cable Excavator Co.**
**Raymond W. Dull Co.**
**Haiss Mfg. Co., Inc., Geo.**
**Indianapolis Cable Excavator Co.**
**Link Belt Co.**
**McMyler-Interstate Co.**
**Osgood Co., The.**
**Sauerman Bros.**
**Weller Mfg. Co.**

### FIRE BRICK.
**Carolina Portland Cement Co.**
**Improved Equipment Co.**

### FURNACES FOR SPECIAL PURPOSES.
**Improved Equipment Co.**

### GAS PRODUCERS.
**Improved Equipment Co.**

### GATES.
**Haiss Mfg. Co., Inc., Geo.**

### GEARS.
**Caldwell, H. W., & Son Co.**
**Jeffrey Mfg. Co.**
**Link Belt Co.**
**Stephens-Adamson Mfg. Co.**
**Weller Mfg. Co.**

### GLASS SAND MACHINERY.
**Lewiston Fdy. & Mach. Co.**

### GYPSUM BLOCK.
**U. S. Gypsum Co.**
**Plymouth Gypsum Co.**

### GYPSUM—PLASTER.
**Best Bros. Keene's Cement Co.**
**Cardiff Gypsum Co.**
**Carolina Portland Cement Co.**
**National Mortar & Supply Co.**
**Ohio & Western Lime Co.**
Plymouth Gypsum Co.
**U. S. Gypsum Co.**
**Wheeling Wall Plaster Co.**

### HAIR.
**Ohio & Western Lime Co.**

### HOISTS, ELECTRIC AND STEAM.
Allis-Chalmers Mfg. Co.
**Link Belt Co.**
**Haiss Mfg. Co., Inc., Geo.**

### HOLLOW CLAY TILE.
**American Clay Co.**
**Metropolitan Paving Brick Co.**
**Vigo-American Clay Co.**

### HYDRATING MCHY.
**Atlas Car & Mfg. Co.**
**Kritzer Co., The.**
**Miscampbell, H.**
Steacy-Schmidt Mfg. Co.
Toepfer, W., & Sons Co.

### LIME.
**Carolina P. C. Co.**
**Kelley Island Lime & Trans. Co.**
**Mitchell Lime Co.**
Moores Lime Co.
**National Lime & Stone Co.**
**National Mortar & Supply Co.**
**Ohio & Western Lime Co., The.**
**Sciote Lime & Stone Co.**

### LIME, HYDRATED.
**Kelley Island Lime & Transport Co.**
**Mitchell Lime Co.**
Moore's Lime Co.
**National Lime & Stone Co.**
**National Mortar & Supply Co.**
**Ohio & Western Lime Co., The.**
**Sciote Lime & Stone Co.**

### LIME KILNS.
**Atlas Car & Mfg. Co.**
**Improved Equipment Co.**
**Steacy-Schmidt Mfg. Co.**

### LOADERS AND UNLOADERS.
**Ambursen Company.**
**Haiss Mfg. Co., Inc., Geo.**
**Jeffrey Mfg. Co.**
**Link Belt Co.**
**Stephens-Adamson Mfg. Co.**
**Weller Mfg. Co.**

### LOCOMOTIVES.
Fate Co., J. D.
Jeffrey Mfg. Co.

### MANGANESE STEEL.
**Allis-Chalmers Mfg. Co.**
**Link Belt Co.**

### METAL LATH.
**Carolina Portland Cement Co.**
Rutledge, A. R.
**Sykes Metal Lath & Roofing Co.**
**Trussed Concrete Steel Co.**

### MOTOR TRUCKS.
Federal Motor Truck Co.
Garford Motor Truck Co.
Pierce Arrow Motor Car Co.
White Company, The.

### PAINT AND COATINGS.
**Cabot, Samuel.**
Calvert Mortar Color Wks.
**Chattanooga Paint Co.**
Clinton Metallic Paint Co.
**Gordon-Hittl Co.**
**Ricketson Mineral Paint Co.**
Trus-Con Laboratories.
**Williams, C. K., & Co.**

### PERFORATED METALS.
**Allis-Chalmers Mfg. Co.**
**Johnson & Chapman.**
**Hendrick Mfg. Co.**
Toepfer, W., & Sons Co.

### PLASTER.
**See Gypsum.**

### PLASTER BOARD.
**Plymouth Gypsum Co.**
**U. S. Gypsum Co.**

### PLASTER MCHY.
**Butterworth & Lowe.**
**Dunning, W. D.**
**Ehrsam, J. B., & Sons Mfg. Co.**
**Miscampbell, H.**
**Williams Pat. Crusher & Pulveriser Co.**

### POWDER
Du Pont de Nemours Co., E. I.

### PREPARED ROOFING—SHINGLES
**Carolina Portland Cement Co.**
**Reynolds Asphalt Shingle Co.**

### PUMPS.
**Allis-Chalmers Mfg. Co.**
**International Steam Pump Co.**

### QUARRY CARS.
See Cars.

### ROAD BUILDING PREPARATION.
Glutrin Paving Co.

### ROAD MACHINERY.
**Austin Mfg. Co.**
**Osgood Co., The.**

### ROOFING-METAL.
**Sykes Metal Lath & Roofing Co.**

### ROOFING, PREPARED.
Asphalt Ready Roofing Co.

### SAND AND GRAVEL WASHING PLANTS.
Dull & Co., Raymond W.
**Link Belt Co.**
**Stephens-Adamson Mfg. Co.**
**Webster Mfg. Co.**
**Weller Mfg. Co.**

### SAND LIME BRICK MACHINERY.
**Amer. Clay Machy. Co.**

### SCALE CARS.
**Atlas Car & Mfg. Co.**

### SCREENS.
**Allis-Chalmers Mfg. Co.**
**American Pulverizer Co.**
**Butterworth & Lowe.**
**Dull & Co., Raymond W.**
**Ehrsam, J. B., & Sons Mfg. Co.**
**Haiss Mfg. Co., Inc., Geo.**
**Hendricks Mfg. Co.**
Jeffrey Mfg. Co.
**Johnston & Chapman Co.**
**Link Belt Co.**
**McLanahan Stone Machine Co.**
**Power & Mining Mach. Co.**
**Stephens-Adamson Mfg. Co.**
**Sturtevant Mill Co.**
**Toepfer, W., & Sons Co.**
**Webster Mfg. Company.**
**Weller Mfg. Co.**

### SECOND-HAND MACHINERY.
**Bourse.**

### SEWER PIPE.
**Plymouth Clay Products Co.**

### SHEAVES, BLOCKS AND VALVES.
**Haiss Mfg. Co., Inc., Geo.**

### SINK AND FLOAT TESTERS.
**Pennsylvania Crusher Co.**

### STEAM SHOVELS.
Ball Engine Co.
**Osgood Co., The.**

### STUCCO RETARDER.
**National Retarder Co.**

### TIRES—RUBBER
**Goodrich, B. F., Co.**

### TRAMWAYS.
**Ambursen Company.**
**American Steel & Wire Co.**
**Link Belt Co.**

### TUBE MILLS.
**Allis-Chalmers Manufacturing Co.**
**Power & Mining Mach. Co.**
**Smidth & Co., F. L.**

### WALL PLUGS AND TIES.
Canton Metal Ceiling Co.
**Sykes Metal Lath & Roofing Co.**

### WATERPROOFING.
**Cabot, Samuel, Inc.**
**Carolina Portland Cement Co.**
**Ceresit Waterproofing Co.**
**General Fireproofing Co., The.**
Sandusky Cement Co.
Toch Brothers.
Trus-Con Laboratories.

### WEIGHING MACHINES.
**Schaffer Eng. & Equip. Co.**
**Sturtevant Mill Co.**

### WIRE AND WIRE FENCING.
**American Steel & Wire Co.**

### WIRE ROPE.
**American Steel & Wire Co.**
**Leschen, A., & Sons Co.**

*It isn't dusting"*

"Just as I told you—the right cement floor finisher would make our concrete floors wearproof, waterproof and oilproof. Now you see why I specified

**R.I.W. CEMENT FILLER & CEMENT FLOOR PAINT**

REMEMBER IT'S WATERPROOF

R. I. W. Cement Filler and Cemeat Floor Paint seal the sandy, porous surface of concrete and cement floors and in this way stop the constant sanding, water infiltration and the soaking up of oil.

And it is so easy to apply—anybody can do it perfectly.

Twelve standard decorative colors. A two-coat proposition that resists wear longer than anything else we have ever seen.

Don't let "cement dust" fly as the floor scuffs off or sands. Stop it immediately with an application of these wonderful preservatives, and save your machinery and stock. *Write for illustrated Booklet from Dept.*, 12.

**TOCH BROTHERS**

Established 1848

Inventors and Manufacturers of R. I. W. Preservative Paints, Compounds, Enamels, Etc.

320 5th Ave., New York

Works: New York, London, England and Toronto, Ont., Canada.

*These ads are selling goods!*

**Get the Toch Agency** Toch Agents are making money because we are always hammering away with ads like the above in forty big national magazines and trade papers. If you're a well established dealer and a "live wire," get in touch with us now, addressing Dept. 12.

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## Concrete for Permanence "Wolverine" for Concrete

Wherever used "Wolverine" has always given the highest satisfaction

**WOLVERINE PORTLAND CEMENT CO.**

COLDWATER, MICH.

Write for prices and information. W. E. COBEAN, Gen. Sales Agt.

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## CAROLINA PORTLAND CEMENT COMPANY

We are the largest distributors of Portland Cement, Lime Plaster, Fire-brick and General Building Material in the Southern States, and have stocks of Standard Brands at all of the Atlantic and Gulf Seaports, and at our interior mills and warehouses, for prompt and economical distribution to all Southern territory. Write for our delivered prices anywhere.

Also Southern agents for the "Dehydratine" waterproofing material. "Universal," "Acme" and "Electroid" Brands Ready Roofing.

GET OUR PRICES

CHARLESTON, S. C. BIRMINGHAM, ALA.
ATLANTA, GA. NEW ORLEANS, LA.

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# You Can SELL Utica Cement At a Lower Price

***Than your competitor can BUY a standard Portland and make more profit than he does***

Dominate local trade—get the big and little contracts with **low** prices and, at the same time, make **more** profit per barrel than the other fellow does at his **high** price.

Smash competition—take the trade you should get—set the pace at the other fellow's expense.

Prices talk — prices sell — prices make more profits for you.

**You Can Make 50 Cents a Barrel With**

# Utica Cement

**Natural Hydraulic**

The average net price to dealers for Utica Cement is 60 cents per barrel.

The average net price to dealers for a standard Portland is $1.31 per barrel.

Tack on **50 cents** profit for yourself on every barrel of Utica Cement you sell—that's $1.10 to **your** customer.

What will your **competitor** do in the face of such a price when he has to **pay 21 cents more wholesale** for Portland than you retail Utica Cement for?

## Utica Cement

### Is Best for Mortar and Mass Concreting

There is no cement that excels Utica Cement for durability in brick and stone masonry work and in mass concreting. It has been in continuous use for 78 years, which is nearly half a century longer than the oldest Portland.

Chicago's lofty skyscrapers, Chicago's great sewer system, Chicago's great canals—all attest to Utica Cement's durability and strength.

Minneapolis, St. Paul, Dubuque, Des Moines, St. Louis, Kansas City, Denver, Pueblo, Peoria, Indianapolis, Cincinnati, Dayton and hundreds of other cities add their O. K. to Chicago's indorsement of Utica Cement.

### Sell a Cement That Has Stood the Test of Nearly a Century

Do not confuse Utica Cement with any other natural cement. It stands the engineer's severest tests for crushing, shearing and tensile strength and, dollar for dollar in cost is stronger than the best Portland. (Make us prove this—Ask for Book of Tests.)

### We Give Exclusive Agencies

We protect Utica dealers in every town or city by giving them exclusive territory under contract. We help Utica Dealers sell Utica Cement and place our Free Engineering Department at their disposal.

**SEND FOR DEALER PLAN**

It contains a full explanation of our agency proposition with a description of our dealer aids and free advertising campaign.

Better send today or your competitor may beat you to it. Use coupon at right or telegraph, if you wish.

**UTICA HYDRAULIC CEMENT CO.**
312 South Dearborn Street
CHICAGO

**DON'T DELAY—MAIL TODAY**

Utica Hydraulic Cement Co.
312 S. Dearborn St.
Chicago

Send us your full dealer offer and plan and such other information as we may require to get a full understanding of the Utica Agency Proposition. This is not to obligate us.

Firm Name .....
My Signature .....
Street Address .....
City ..... State .....

This is the

**Baby Bates Valve Bag Filling Machine**

an adaptation of the single feed principle to a Two Tube Packer for Pulverized Limestone and similar Rock Products.

You can pack Limestone with this machine for Ten Cents a ton.

*LET US HEAR FROM YOU*

**Bates Valve Bag Company**

**1834 McCormick Building** **Chicago, Ill.**

*THE BEST BLAST-HOLE DRILL ON EARTH*

**THE CYCLONE NO. 14**

**Not a Boast—A FACT**

We will prove the superiority of the No. 14 Drill by placing one of the outfits in your quarry against any or all other makes.

**If the Cyclone doesn't out-drill and out-wear all other drills, we will remove it from the work without cost to you.**

Our proposition gets below the paint—It eliminates talking points and evaporates hot air. It puts buying on a strictly engineering basis where it belongs.

Furnished in Steam, Gasoline, Compressed Air or Electric Power Traction or Non-Traction.

**Let Us Send You Full Particulars**

**The SANDERSON-CYCLONE DRILL CO.**

**ORRVILLE, OHIO**

**Eastern and Export Office, 50 Church St., NEW YORK, N. Y.**

**Macadam Roads That Do Not Bleed in Hot Weather**

**Do Not Ravel with Traffic, and Maintain a Hard, Compact Surface**

*View of Road, Goshen Township, Mahoning Co., Ohio. Constructed 1913. Photograph Nov., 1915.*

**Glutrin Bound Roads**

should be advocated by every producer of stone, slag or gravel in the construction of macadam roads, because they mean a bigger volume and a bigger profit.

*Your coöperation is cordially desired.*

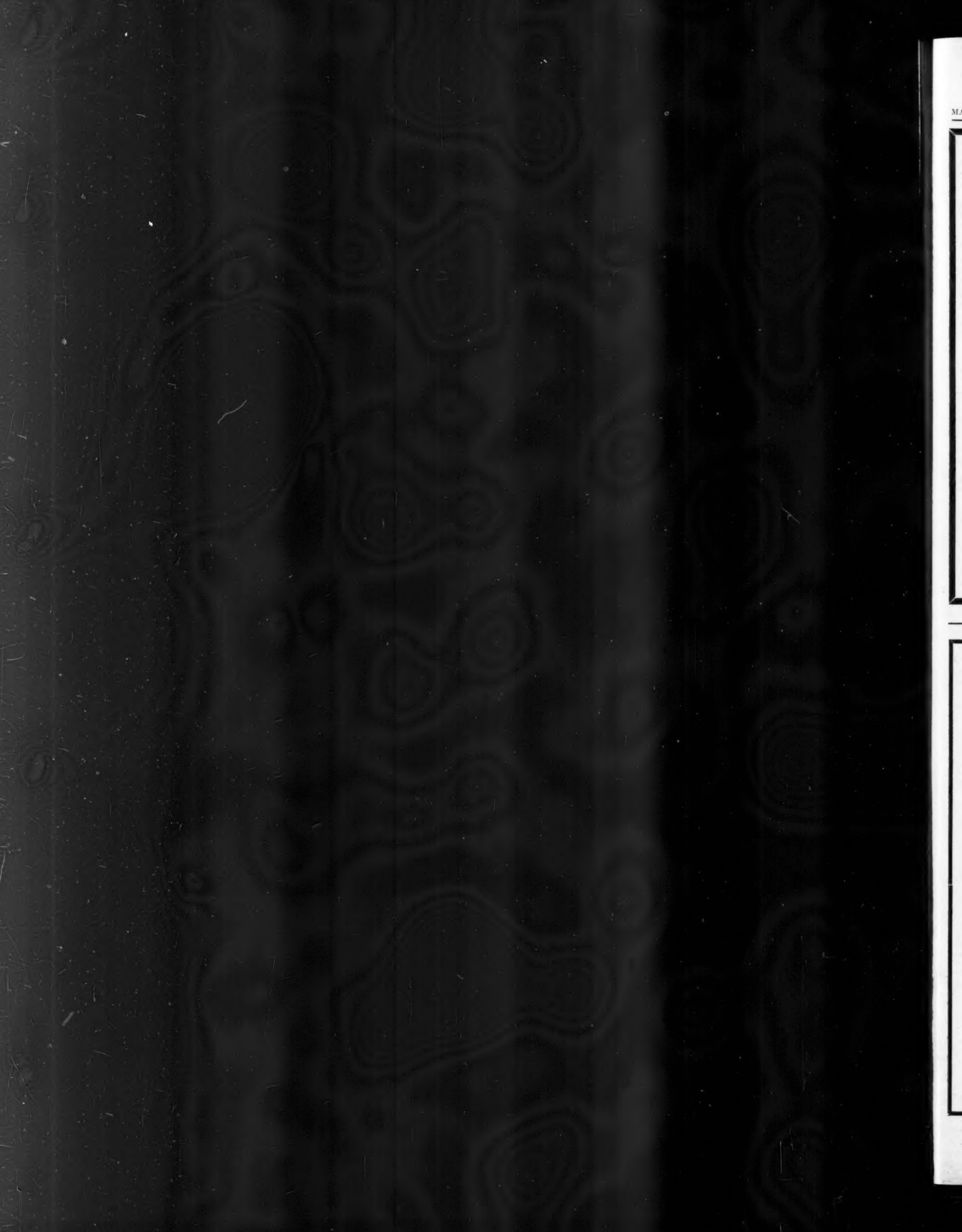
GLUTRIN.

**Glutrin Road Binder**

is the simplest surfacing process known. The liquid binder material is applied from an ordinary water sprinkler. The roller follows the sprinkler in the usual way, resulting in the road surface that gives the biggest service for first cost.

**THE GLUTRIN PAVING COMPANY**

Hartmann Building Columbus, Ohio



# Your Transportation Department Will Be Respected by Both Customers and Competitors

THEY WILL NOTICE YOUR ABILITY TO take care of business in many places they had never dreamed were possible to reach.

FOR INSTANCE, averaging 50.86 miles and delivering 19,858 pounds of material each day during February, 1½ Ton Federal Truck No. 3225 earned for itself the respect and admiration of all its owners' competitors, in addition to the enthusiastic praise of its owners.

WE WILL GLADLY SEND YOU INTERESTING DATA concerning Federal Trucks in the rock products and building materials business. We also publish a monthly magazine on transportation which we will be glad to send you upon request.

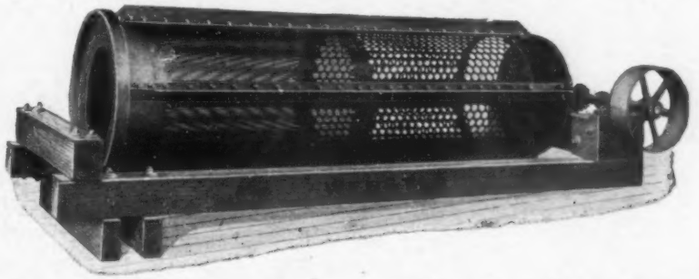
THEY WILL RESPECT THE PROMPT SERVICE, THE QUICK DELIVERIES and large tonnage that your transportation handles.

**Federal Motor Truck Company**
DETROIT, MICHIGAN.
**1½, 2, and 3½-Ton Worm Drive Motor Trucks**

# Good Cement Is But One Element of High Grade Concrete. Use

# WEBSTER ELEVATORS AND SCREENS FOR

Handling your stone, sand and gravel, and note the clean, properly-sized product that enters your mixers.



We design and manufacture complete elevating, conveying, screening and power transmission equipments for crushed-stone, sand and gravel, lime and cement plants.

## The Webster M'f'g Company
TIFFIN, OHIO

**Chicago** **New York**

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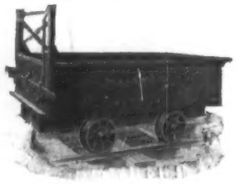
## Lime Hydrators, Kilns, Calcining and Quarry Cars



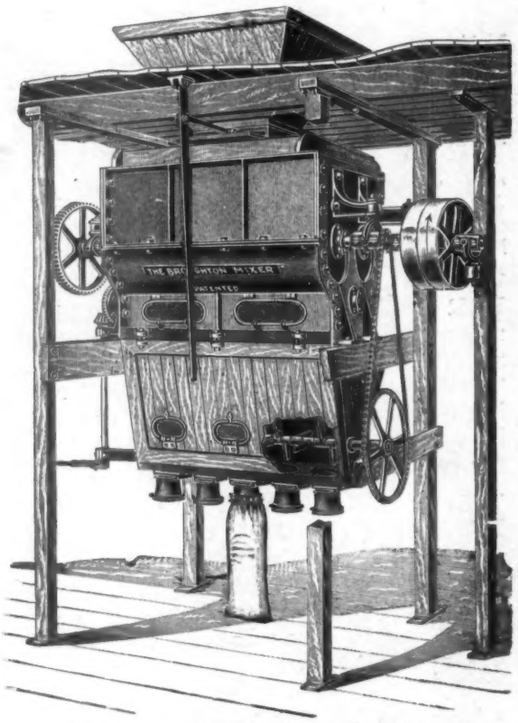
No. 274
End Dump Quarry Car.

No. 217-H Rocker Side Dump Car
Also made in end dump. Above car made for loading with steam shovel.

## Reduce Your Handling Costs
BY USING
## ATLAS CARS AND LOCOMOTIVES

Where a trolley wire or third rail is undesirable investigate our storage battery locomotives. Made in several styles and sizes. Cars to suit every requirement.

**THE ATLAS CAR & MFG. CO.**
909 Marquette Road
Department 6
**Cleveland, Ohio**



**The most thorough and efficient Mixers of Plaster, Cement and Dry Materials. Send for Circular.**

**W. D. DUNNING, Water St., Syracuse. N. Y.**

CONCRETE FOR PERMANENCE

## Every Automobile Buyer Is Your Prospect

Every house-owner who buys a car is in the market for a garage. Why not get a list of buyers' names from your automobile dealers and send them a copy of our 24-page book "Choosing the Garage." This book gives complete working plans and descriptions of the six leading types of fireproof garages. Get estimates from a contractor and work with him to close the sale.

### How We Co-operate

Write us and we will send you full details of this practical plan. We will suggest numerous other ways of increasing the demand for your materials by pushing the sale of stucco houses, remodeling frame and brick houses in stucco, building concrete walks, etc.

We will also send you on request our monthly Atlas Almanac, containing timely and useful selling suggestions for increasing your business.

Philadelphia Boston St. Louis **The Atlas Portland Cement Co.** Minneapolis Des Moines Dayton
*Members of the Portland Cement Association*
30 Broad St., New York; Corn Exchange Bk. Bldg., Chicago

Atlas-White Stucco Garage

PORTLAND
# ATLAS CEMENT
*"The Standard by which all other makes are measured"*

The Atlas Portland Cement Co., 30 Broad Street, New York, or Corn Exchange Bank Building, Chicago:
Send me your "Guide to Good Stucco," together with Specifications—also the Contracter's Atlas and special sales information on subjects checked: ☐ New Stucco Homes, ☐ Remodeling in Stucco, ☐ Garages, ☐ Dairies.

Name ..... Address .....